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ART. I. *The Poetry of Architecture.* By KATA PHUSIN.

No. 3. THE VILLA.

I. *The Mountain Villa. — Lago di Como.*

IN all arts or sciences, before we can determine what is just or beautiful in a group, we must ascertain what is desirable in the parts which compose it, separately considered; and therefore it will be most advantageous in the present case, to keep out of the village and the city, until we have searched hill and dale for examples of isolated buildings. This mode of considering the subject is also agreeable to the feelings, as the transition from the higher orders of solitary edifices, to groups of associated edifices, is not to sudden or startling, as that from nature's most humble peace, to man's most turbulent pride.

We have contemplated the rural dwelling of the peasant; let us next consider the ruralised domicile of the gentleman; and here, as before, we shall first determine what is theoretically beautiful, and then observe how far our expectations are fulfilled in individual buildings. But a few preliminary observations are necessary.

Man, the peasant, is a being of more marked national character, than man, the educated and refined. For nationality is founded, in a great degree, on prejudices and feelings inculcated and aroused in youth, which grow inveterate in the mind as long as its views are confined to the place of its birth; its ideas moulded by the customs of its country, and its conversation limited to a circle composed of individuals of habits and feelings like its own; but which are gradually softened down, and eradicated, when the mind is led into general views of things, when it is guided by reflection instead of habit, and has begun to lay aside opinions contracted under the influence of association and prepossession, substituting in their room philosophical deductions from the calm contemplation of the various tempers, and thoughts, and customs, of mankind. The love of its country will remain with undiminished strength in the

cultivated mind, but the national modes of thinking will vanish from the disciplined intellect. Now as it is only by these mannerisms of thought that architecture is affected, we shall find that, the more polished the mind of its designer, the less national will be the building; for its architect will be led away by a search after a model of ideal beauty, and will not be involuntarily guided by deep-rooted feelings, governing irresistibly his heart and hand. He will therefore be in perpetual danger of forgetting the necessary unison of scene and climate, and, following up the chase of the ideal, will neglect the beauty of the natural; an error which he could not commit, were he less general in his views, for then the prejudices to which he would be subject, would be as truly in unison with the objects which created them, as answering notes with the chords which awaken them. We must not, therefore, be surprised, if buildings bearing impress of the exercise of fine thought and high talent in their design, should yet offend us by perpetual discords with scene and climate; and if, therefore, we sometimes derive less instruction, and less pleasure, from the columnar portico of the Palace, than from the latched door of the Cottage.

Again: man, in his hours of relaxation, when he is engaged in the pursuit of mere pleasure, is less national than when he is under the influence of any of the more violent feelings which agitate every-day life. The reason of this may at first appear somewhat obscure, but it will become evident, on a little reflection. Aristotle's definition of pleasure, perhaps the best ever given, is, "an agitation, and settling of the spirit into its own proper nature;" similar, by the by, to the giving of liberty of motion to the molecules of a mineral, followed by their crystallisation, into their own proper form. Now this "proper nature," *ὑπάρχουσα φύσις*, is not the acquired national habit, but the common and universal constitution of the human soul. This constitution is kept under by the feelings which prompt to action, for those feelings depend upon parts of character, or of prejudice, which are peculiar to individuals or to nations; and the pleasure which all men seek is a kind of partial casting away of these more active feelings, to return to the calm and unchanging constitution of mind which is the same in all. We shall, therefore, find that man, in the business of his life, in religion, war, or ambition, is national, but in relaxation he manifests a nature common to every individual of his race. A Turk, for instance, and an English farmer, smoking their evening pipes, differ only in so much as the one has a mouth-piece of amber, and the other one of sealingwax; the one has a turban on his head, and the other a nightcap; they are the same in feeling, and to all intents and purposes the same men. But a Turkish janissary and an English grenadier differ widely in

all their modes of thinking, feeling, and acting, they are strictly national. So again, a Tyrolese evening dance, though the costume, and the step, and the music may be different, is the same in feeling as that of the Parisian guinguette; but follow the Tyrolese into their temples, and their deep devotion and beautiful though superstitious reverence will be found very different from any feeling exhibited during a mass in Notre-Dame. This being the case, it is a direct consequence, that we shall find much nationality in the Church or the Fortress, or in any building devoted to the purposes of active life, but very little in that which is dedicated exclusively to relaxation, the Villa. We shall be compelled to seek out nations of very strong feeling and imaginative disposition, or we shall find no correspondence whatever between their character, and that of their buildings devoted to pleasure. In our own country, for instance, there is not the slightest. Beginning at the head of Windermere, and running down its border for about six miles, there are six important gentlemen's seats, villas they may be called, the first of which is a square white mass, decorated with pilasters of no order, set in a green avenue, sloping down to the water; the second is an imitation, we suppose, of something possessing theoretical existence in Switzerland, with sharp gable ends, and wooden flourishes turning the corners, set on a little dumpy mound, with a slate wall running all round it, glittering with iron pyrites; the third is a blue dark-looking box, squeezed up into a group of straggly larches, with a bog in front of it; the fourth is a cream-coloured domicile, in a large park, rather quiet and unaffected, the best of the four, though that is not saying much; the fifth is an old-fashioned thing, formal, and narrow-windowed, yet grey in its tone, and quiet, and not to be maligned; and the sixth is a nondescript, circular, putty-coloured habitation, with a leaden dome on the top of it. If, however, instead of taking Windermere, we trace the shore of the Lago di Como, we shall find some expression and nationality, and there, therefore, will we go, to return, however, to England, when we have obtained some data by which to judge of her more fortunate edifices. We notice the Mountain Villa first, for two reasons; because effect is always more considered in its erection, than when it is to be situated in a less interesting country, and because the effect desired is very rarely given, there being far greater difficulties to contend with. But one word more, before setting off for the south. Though, as we saw before, the gentleman has less *national* character than the boor, his *individual* character is more marked, especially in its finer features, which are clearly and perfectly developed by education; consequently, when the inhabitant of the villa has

had anything to do with its erection, we might expect to find indications of individual and peculiar feelings, which it would be most interesting to follow out. But this is no part of our present task; at some future period we hope to give a series of essays on the habitations of the most distinguished men of Europe, showing how the alterations which they directed, and the expression which they bestowed, corresponded with the turn of their emotions, and leading intellectual faculties: but at present we have to deal only with generalities; we have to ascertain, not what will be pleasing to a single mind, but what will afford gratification to every eye possessing a certain degree of experience, and every mind endowed with a certain degree of taste.

Without further preface, therefore, let us endeavour to ascertain what would be theoretically beautiful, on the shore, or among the scenery of the Larian Lake, preparatory to a sketch of the general features of those villas which exist there, in too great a multitude to admit, on our part, of much individual detail.

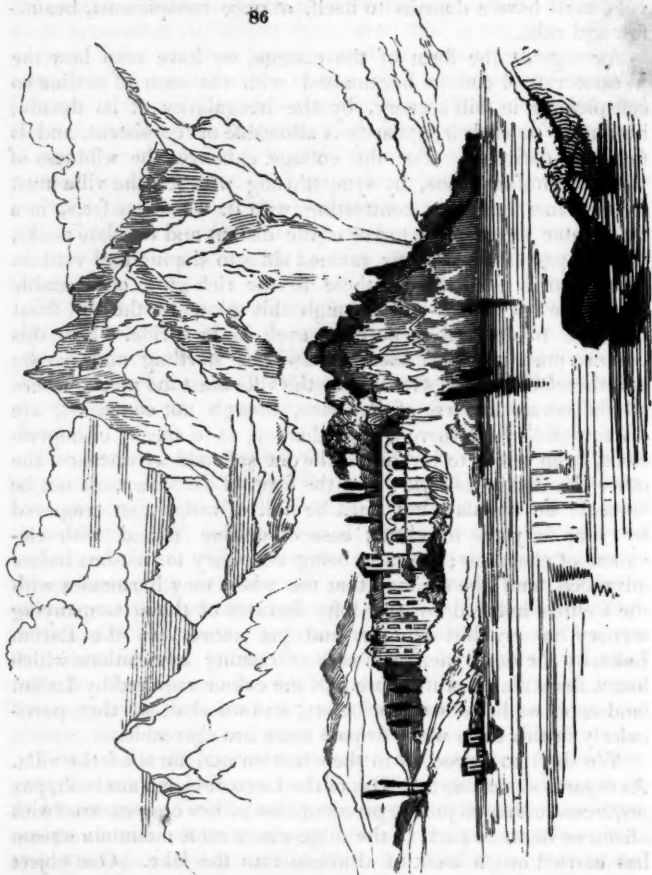
For the general tone of the scenery, we may refer to the paper on the Italian cottage; for the shores of the Lake of Como have generally the character there described, with a little more cheerfulness, and a little less elevation, but aided by great variety of form. They are not quite so rich in vegetation as the plains: both because the soil is scanty, there being, of course, no decomposition going on among the rocks of black marble which form the greater part of the shore; and because the mountains rise steeply from the water, leaving only a narrow zone at their bases in the climate of Italy. In that zone, however, the olive grows in great luxuriance, with the cypress, orange, aloe, myrtle, and vine, the latter always trellised.

Now, as the situation of the cottage, we have already seen that great humility was necessary, both in the building and its site, to prevent it from offending us by an apparent struggle with forces, compared with which its strength was dust: but we cannot have this extreme humility in the villa, the dwelling of wealth and power, and yet we must not, any more, suggest the idea of its resisting natural influences under which the Pyramids could not abide. The only way of solving the difficulty is, to select such sites as shall seem to have been set aside by nature as places of rest, as points of calm and enduring beauty, ordained to sit and smile in their glory of quietness, while the avalanche brands the mountain top, and the torrent desolates the valley; yet so preserved, not by shelter amidst violence, but by being placed wholly out of the influence of violence. For in this they must differ from the site of the cottage, that the peasant may seek for protection under some low rock or in some narrow dell, but the

villa must have a domain to itself, at once conspicuous, beautiful, and calm.

As regards the form of the cottage, we have seen how the Westmoreland cottage harmonised with the ease of outline so conspicuous in hill scenery, by the irregularity of its details; but, here, no such irregularity is allowable or consistent, and is not even desirable. For the cottage enhances the wildness of the surrounding scene, by sympathising with it; the villa must do the same thing, by contrasting with it. The eye feels, in a far greater degree, the terror of the distant and desolate peaks, when it passes down their ravined sides to sloping and verdant hills, and is guided from these to the rich glow of vegetable life in the low zones, and through this glow to the tall front of some noble edifice, peaceful even in its pride. But this contrast must not be sudden, or it will be startling and harsh; and therefore, as we saw above, the villa must be placed where all the severe features of the scene, though not concealed, are distant, and where there is a graduation, so to speak, of impressions, from terror to loveliness, the one softened by distance, the other elevated in its style: and the form of the villa must not be fantastic or angular, but must be full of variety, so tempered by simplicity as to obtain ease of outline united with elevation of character; the first being necessary for reasons before advanced, and the second, that the whole may harmonise with the feelings induced by the lofty features of the accompanying scenery in any hill country, and yet more, on the Larian Lake, by the deep memories and everlasting associations which haunt the stillness of its shore. Of the colour required by Italian landscape we have spoken before, and we shall see that, particularly in this case, white or pale tones are agreeable.

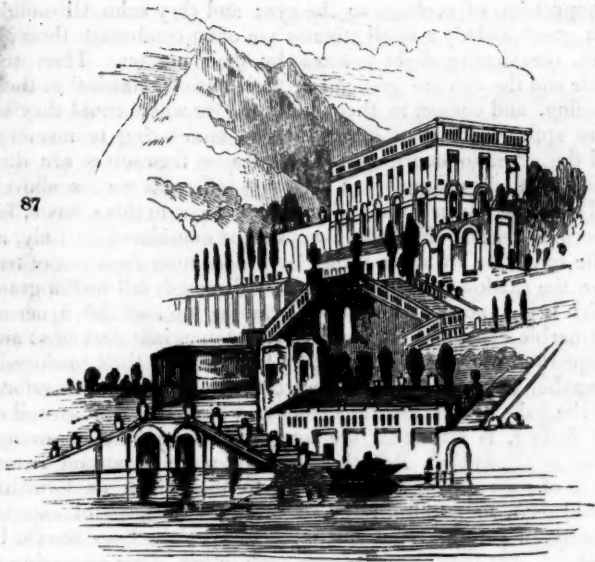
We shall now proceed to the situation and form of the villa. As regards situation; the villas of the Lago di Como are built, *par préférence*, either on jutting promontories of low crag covered with olives, or on those parts of the shore where some mountain stream has carried out a bank of alluvium into the lake. One object proposed in this choice of situation is, to catch the breeze as it comes up the main opening of the hills, and to avoid the reflection of the sun's rays from the rocks of the actual shore; and another is, to obtain a prospect up or down the lake, and of the hills on whose projection the villa is built: but the effect of this choice, when the building is considered the object, is to carry it exactly into the place where it ought to be, far from the steep precipice and dark mountain, to the border of the bending bay and citron-scented cape, where it stands at once conspicuous and in peace. For instance, in *fig. 86.* (Bellaggio, Lago di Como), although the eye falls suddenly from the crags above to the promontory below, yet all the sublime and severe features



of the scene are kept in the distance, and the villa itself is mingled with graceful lines, and embosomed in rich vegetation. The promontory separates the Lake of Lecco from that of Como, properly so called, and is three miles from the opposite shore, which gives room enough for aerial perspective. So also in *fig. 87*.

We shall now consider the form of the villa. It is generally the apex of a series of artificial terraces, which conduct through its gardens to the water. These are formal in their design, but extensive, wide, and majestic in their slope, the steps being generally about $\frac{1}{2}$ ft. high and $4\frac{1}{2}$ ft. wide (sometimes however much deeper). They are generally supported by white wall, strengthened

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by unfilled arches, the angles being turned by sculptured pedestals, surmounted by statues, or urns. Along the terraces are carried rows, sometimes of cypress, more frequently of orange or lemon trees, with myrtles, sweet bay, and aloes, intermingled, but always with dark and spiry cypresses occurring in groups; and attached to these terraces, or to the villa itself, are series of arched grottoes (seen well in *fig. 86.*), built (or sometimes cut in the rock) for coolness, frequently overhanging the water, kept dark and fresh, and altogether delicious to the feelings. A good instance of these united peculiarities is seen in *fig. 87.* (Villa Somma-Riva, Lago di Como). There are a few slight additions made to the details of the approach, that it may be a good example of general style.

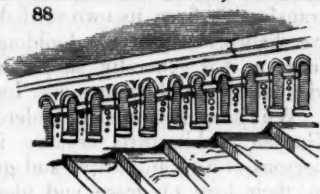
The effect of these approaches is disputable. It is displeasing to many, from its formality; but we are persuaded that it is right, because it is a national style, and therefore has in all probability due connexion with scene and character; and this connexion we shall endeavour to prove.

The frequent occurrence of the arch is always delightful in distant effect, partly on account of its graceful line, partly because the shade it casts is varied in depth, becoming deeper and deeper as the grotto retires, and partly because it gives great apparent elevation to the walls which it supports. The grottoes themselves are agreeable objects seen near, because they give

an impression of coolness to the eye; and they echo all sounds with great melody; small streams are often conducted through them, occasioning slight breezes by their motion. Then the statue and the urn are graceful in their outline, classical in their meaning, and correct in their position, for where could they be more appropriate than here; the one ministering to memory, and the other to mourning. The terraces themselves are dignified in their character (a necessary effect, as we saw above), and even the formal rows of trees are right in this climate, for a peculiar reason. Effect is always to be considered, in Italy, as if the sun were always to shine, for it does nine days out of ten. Now the shadows of foliage regularly disposed, fall with a grace which it is impossible to describe, running up and down across the marble steps, and casting alternate statues into darkness; and chequering the white walls with a "method in their madness," altogether unattainable by loose grouping of trees; and therefore, for the sake of this kind of shade, to which the eye, as well as the feeling, is attracted, the long row of cypresses or orange trees is allowable. But there is a still more important reason for it, of a directly contrary nature to that which its formality would seem to require. In all beautiful designs of exterior descent, a certain regularity is necessary; the lines should be graceful, but they must balance each other, slope answering to slope, statue to statue. Now this mathematical regularity would hurt the eye excessively in the midst of scenes of natural grace, were it executed in bare stone; but, if we make part of the design itself foliage, and put in touches of regular shade, alternating with the stone, whose distances and darkness are as mathematically limited as the rest of the grouping, but whose nature is changeful, and varied in individual forms, we have obtained a link between nature and art, a step of transition, leading the feelings gradually from the beauty of regularity to that of freedom. And this effect would not be obtained, as might at first appear, by intermingling trees of different kinds, at irregular distances, or wherever they chose to grow; for then the design and the foliage would be instantly separated by the eye, the symmetry of the one would be interrupted, the grace of the other lost; the nobility of the design would not be seen, but its formality would be felt; and the wildness of the trees would be injurious, because it would be felt to be out of place. On principles of composition, therefore, the regular disposition of decorative foliage is right, when such foliage is mixed with architecture; but it requires great taste, and long study, to design this disposition properly. Trees of dark leaf and little colour should be invariably used, for they are to be considered, it must be remembered, rather as free touches of shade than as trees. Take, for instance the most simple bit of design, such as the

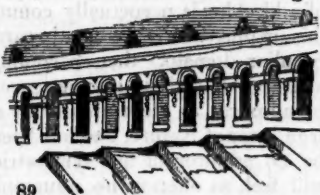
hollow balustrade, *fig. 88*, and suppose that it is found to look cold or raw, when executed, and to want depth. Then put small pots, with any dark shrub, the darker the better, at fixed places behind them, at the same distance as the balustrades, or

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between every two or three, as shown in *fig. 89*, and keep them cut down to a certain height, and we have immediate depth and increased ease, with undiminished symmetry. But the great difficulty is to keep the thing within proper limits, since too much of it will lead to paltriness, as is the case in a slight degree in Isola Bella, on Lago Maggiore; and not to let it run into small details: for, be it remembered, that it is only in the majesty of art, in its large and general effects, that this regularity is allowable; nothing but variety should be studied in

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detail, and therefore there can be no barbarism greater than the lozenge borders and beds of the French garden. The scenery around must be naturally rich, that its variety of line may relieve the slight stiffness of the architecture itself: and the climate must always be considered; for, as we saw, the chief beauty of these flights of steps depends upon the presence of the sun; and, if they are to be in shade half the year, the dark trees will only make them gloomy, the grass will grow between the stones of the steps, black weeds will flicker from the pedestals, damp mosses discolour the statues and urns, and the whole will become one incongruous ruin, one ridiculous decay. Besides, the very dignity of its character, even could it be kept in proper order, would be out of place in any country but Italy. Busts of Virgil or Ariosto would look astonished in an English snow storm; statues of Apollo and Diana would be no more divine, where the laurels of the one would be weak, and the crescent of the other would never gleam in pure moonlight. The whole glory of the design consists in its unison with the dignity of the landscape, and with the classical tone of the country. Take it away from its concomitant circumstances, and, instead of conducting the eye to it by a series of lofty and dreamy impressions, bring it through green lanes, or over copse-covered crags, as would be the case in England, and the whole system becomes utterly and absolutely absurd, ugly in outline, worse than useless in application, unmeaning in design, and incongruous in association.

It seems, then, that in the approach to the Italian villa, we have discovered great nationality and great beauty, which was more than we could have expected, but a beauty utterly untransferable from its own settled habitation. In our next paper we shall proceed to the building itself, which will not detain us long, as it is generally simple in its design, and take a general view of villa architecture over Italy.

We have bestowed considerable attention on this style of Garden Architecture, because it has been much abused by persons of high authority, and general good taste, who forgot, in their love of grace and ideal beauty, the connexion with surrounding circumstances so manifest even in its formality. Eustace, we think, is one of these ; and, although it is an error of a kind he is perpetually committing, he is so far right, that this mannerism is frequently carried into excess even in its own peculiar domain, then becoming disagreeable, and is always a dangerous style in inexperienced hands. We think, however, paradoxical as the opinion may appear, that every one who is a true lover of Nature, and has been bred in her wild school, will be an admirer of this symmetrical designing, in its place ; and will feel, as often as he contemplates it, that the united effect of the wide and noble steps, with the pure water dashing over them like heated crystal, the long shadows of the cypress groves, the golden leaves and glorious light of blossom of the glancing aloes, the pale statues gleaming along the heights in their everlasting death in life, their motionless brows looking down for ever on the loveliness in which their beings once dwelt, marble forms of more than mortal grace lightening along the green arcades, amidst dark cool grottoes, full of the voice of dashing waters, and of the breath of myrtle blossoms, with the blue of the deep lake and the distant precipice mingling at every opening with the eternal snows glowing in their noontide silence, is one not unworthy of Italy's most noble remembrances.

ART. II. *Hints on Construction : addressed to Architectural Students.*

By GEORGE GODWIN, Jun., F.S.A. and M.I.A.

NO. I. INTRODUCTION.

AN interest in architectural productions, leading to a knowledge of just principles in regard to visible beauty, and tending unquestionably to advance the character of architecture as a fine art, has been lately created in the public mind by the concurrence of several causes, to a degree perhaps unprecedented in England : and we are disposed to believe that it needs only a proper amount of zeal and activity on the part of its professors, at this moment, to obtain for themselves a position in public

opinion which shall insure to them hereafter the unfettered exercise of their talents when called into operation, and to enable them to remove entirely the unfavourable impression in regard to English architectural taste, which has long existed in the minds of our various Continental neighbours, — perhaps not without reason.

Under this view, it behoves every professor, as we think, who has the interest of his noble and elevating pursuit at heart, to be up and stirring; and, that their efforts may be seconded, we are induced by strong feeling on the subject, modestly, but earnestly, to call upon the English students of architecture to apply themselves anxiously and unceasingly to the study of it, in all its bearings; so that opprobrium may not hereafter return to us on this head, but that England may become as super-eminent among nations for her school of architects, as she now is for commercial enterprize and manufacturing skill. They should lose no opportunity of storing their note-book, and through that their memory, with beautiful forms; of cultivating taste and exercising their judgment. They should travel in foreign countries, examining remains whose character for beauty is established, and investigating the principles which guided alike the ancients and the architects of the middle ages, both in the arrangement of their edifices, and the choice of the decorations and ornaments employed, with a view to the formation afterwards of new and beautiful combinations, in buildings adapted to their required purposes, to the habits of their occupants, and the climate of the country in which they are to be erected.

To effect this end, namely, the creation of visible beauty (to which *fitness* is essentially necessary), is the highest office of the architect, and requires the highest order of mind, as well as the most sedulous study. This is architecture as an art; but before this point can be reached, before the powers of the mind can be rendered available to this end, architecture as a science, if we may so speak, must be understood; under which head, although requiring a less order of intellect, its ramifications are so extensive, and the points to be considered are so numerous and of such exceeding importance, that unremitting application almost of a life's duration is necessary for its mastery.

It has been often said that a knowledge of construction is as necessary to the architect as that of anatomy to the sculptor; but we would go even farther than that, and say it is as necessary to him as the latter is to the surgeon, inasmuch as it is by means of that alone that he can usefully operate. Without it, although an artist may possess the greatest powers of invention, and be able to produce forms of surprising beauty *per se*, he cannot materially assist in effecting the chief purpose of architecture; namely, the comfort and happiness of individuals, and the advancement of

society. Strange to say, however, a knowledge of construction, the study of which, if what we have said be true, forms a most important portion of an architect's education, has apparently been deemed immaterial; and, in consequence, so much neglected as to have led to numberless serious results, and to have made the idea of an architect's design and estimate of the expense synonymous, in the minds of some, with that of a falsely stated or unwise scheme.

The scientific and influential body of men known as civil engineers owes its establishment, perhaps, to the inattention shown by architects to a knowledge of construction; it may, in fact, be termed that section of the profession which consists of those who, neglecting in a degree the production of beauty, have studied more immediately that which the others have neglected. Now so far as *they* are concerned, this division of labour, by means of which greater excellence is attained, is advantageous to society, inasmuch as constructive skill and scientific knowledge may be of the greatest value without fine taste or acquaintance with architecture as an art: but in regard to the architect it is different; for, without a knowledge of construction, as we have said already, he cannot proceed a single step with any advantage to his fellows.

In the face of this, however, we have known many young men of talent to leave offices of first-rate practice wherein they had been educated, not merely profoundly ignorant of all that relates to construction (even of the workman's nomenclature, and therefore certain not to command any attention from workmen); not merely unable to point out how they would have their ideas carried into execution, and to discover if the work were properly or improperly performed; not merely unable to arrange their plans with a view to the relative expense of certain methods and materials, so that the greatest effect might be produced at the least cost; but so thoroughly imbued with the notion that such mechanical portions of their professional duties were unworthy of their attention, that they were not likely to attempt to gain any acquaintance with them, until they had been slowly taught their error by experience. The Council of the Institute of British Architects have done much to induce more immediate attention to construction on the part of students, and have shown the importance which they themselves attach to a knowledge of it, by the number of papers relating thereto which have been read, and the lectures on specific portions of it which have been delivered. It must, however, be urged again and again, before we can hope that good results will be strikingly apparent; and, feeling that every attempt, however humble, to direct the attention of the student to this department of his profession will necessarily effect good, in a greater or

less degree in proportion as the effort may be well directed, we propose to issue, with this end in view, a series of disjointed remarks under various heads (such as, Foundations; Bricks, and Brickwork; Mortar and Cements; Carpentry; Iron, Zinc, and Lead; Internal Finishing, &c., &c.), embodying information concerning materials generally used, the modes of executing certain works, points to be especially attended to by the architect during his superintendence of an ordinary dwelling-house, and such others matters of detail as we may deem likely to be of value to the tyro.

These papers will put forward no pretensions to be considered a complete treatise on construction, nor aim at any thing further than a small degree of usefulness; so that, if our endeavours should fail to be successful, they will not at all events subject us to be termed presumptuous. We commence with some memoranda regarding the preparation of

FOUNDATIONS.

Although we do not very often hear of the entire destruction of a building through inattention to the nature of the soil on which it stands, or want of judgment in the means employed to remedy the defects in it, or see numerous buildings emulating the towers at Pisa and Bologna, there are few rows of newly built houses whose "compo'd" fronts will not prove, by diagonal cracks over the window openings (usually caused by the sinking down of the party walls with their heavy load of chimneys), that a reiteration of the necessity of carefully examining the ground on which either a public building or a private dwelling is to be erected, may still be serviceable. All "newly made ground," to use a technical expression, should be removed; clayey soil, even if apparently compact, should be viewed with distrust and treated with precaution, being likely to shrink and crack. Dry gravelly soils sometimes contain vacuities which collapse when loaded with a certain weight: and even a rock will not always prove a good foundation. Indeed, under certain circumstances, rock affords the least trustworthy foundation that can be quoted. If, for example, its bed is not horizontal but oblique, as is often the case, there will always be a probability, especially if excavations are made near it, that portions subjected to any pressure, will *slip*, and the building, if one be upon it, be destroyed. At St. Mary's Cemetery in Liverpool, the chapel, erected on a mass of the new red sandstone (on one side of which there is a deep cutting), is in this predicament. Rain water, collected in the fissures, and expanded by frost, has caused the rock to split obliquely, which is the direction of its bed, in several places; and, although the surface of the rock has been pared down so as to prevent the lodgement of water as far as is possible, and

other precautionary measures adopted, it is to be feared that the injury will extend to the building.

Previously, then, to the commencement of an edifice, the ground should be tried by ramming, and if this examination be unsatisfactory, by boring. Digging deeper into the earth does not always secure a better bottom, indeed we should at times commit an error by so doing; thus St. Paul's Cathedral stands tolerably securely on a stratum of pot-earth or clay, under which, for forty feet in depth, is said to be dry sand that will run through the fingers; and part of Greenwich Hospital is erected upon a thin layer of gravel immediately above a similar quicksand. In either case, had this stratum been removed, which now serves as the one broad footing on which each building stands, a considerable difficulty would have been created.

If was formerly the custom when the natural soil was bad to a greater depth than could be digged down to, and the building was not of sufficient importance to admit the expense of piling, to excavate to a certain distance, and then, having attained a perfect level (which in all cases is essentially necessary), to form a platform, by means of logs of wood, or sleepers, 5 or 6 inches square, and placed 3 or 4 feet asunder in the direction of the thickness of the wall, on which was laid strong planking in the opposite direction, securely spiked down, and on this the walls were built. The foundation of many houses in Westminster, the soil of which is, for the most part, of a marshy nature, was prepared in that way, and we have seen *fir* sleepers, some centuries old, taken up in that neighbourhood, which having been exposed to no alternations of temperature, or of dampness and dryness, but constantly embedded in the boggy earth, were exceedingly sound. Except under extraordinary circumstances, however, all woods are subject to decay, and destructible by worms, and their employment therefore should be avoided in foundations, where restoration is almost impossible, and stability of vital importance. Not many years ago, part of a large building at Amsterdam, which had formerly belonged to the old Dutch East India Company, fell into the river during the night, without giving any warning, in consequence of the gradual and unobservable decay of the piles on which it stood in common with most buildings there.

When the soil on the site of a proposed edifice was unequally bad, portions were excavated, and piers of masonry or of brickwork, as the case might be, were built up from the solid ground, and connected by arches on which the walls were built. In as much, however, as a building so raised was put upon a series of props or legs, some of which would probably settle down or penetrate the earth more than others, and in most cases *did* do so, this plan may not be deemed infallible.

At the present moment, the mode of preparing foundations most generally adopted depends on the concreting power of lime, by means of which a solid rock of any size or substance, may be formed for the building to stand on; and this method, on account of its excellence, will soon, probably, render all others obsolete, except as accessories.

By the use of "Concrete," we may almost prevent the possibility of failure, so far as regards foundation, and that too with a comparatively trifling increase of expense. For our own part, we would not build a common "eight-room'd" house, if circumstances allowed it, without a bed of concrete in trenches under all the walls. In ordinary cases, if this were 9 in. wider on each side than the footings, 12 in. in thickness, and put in with proper care, the probability of settlements would be entirely removed. Concrete serves, too, to prevent dampness in the walls, and as its presence generally lessens the quantity of brickwork required, only a small addition to the expense would be caused by its introduction. In some situations, indeed, as it may be put in on ground on which brickwork could not safely be commenced, and as it is of itself cheaper than brickwork, a considerable saving may be effected by its use.

The subject of Concrete, the various modes of preparation, its advantages and peculiarities, are somewhat fully treated of in the first volume of the *Transactions of the Institute of British Architects*, to which we venture to refer our readers; but as it is a most important material in construction, and its application of every-day occurrence, we shall briefly describe the best mode of compounding it, and mention some points to be attended to in its use.

ART. III. *Remarks on the Construction of Waterloo Bridge and London Bridge.* By an ARCHITECT. Communicated by T. B. W.

IN these days of railroads and bridge-building, when every architect is more or less an engineer as well as an artist, and when every one studying the art ought not only to acquire a knowledge of the principles of taste, but be familiar with all the principal problems of practical mathematics, the following document, as it appears to me, well deserves a place in your pages. It was written by an architect who is now high in his profession; and, though I give you his name, yet I should not wish you to publish it at present. The document was in circulation ten or twelve years ago, at which time I was fortunate enough to procure a copy of it.

PROPOSED new London Bridge.—The design of the late John Rennie, Esq., has been recommended by the committee. This is, in principle of construction, similar to Waterloo Bridge,

which has been frequently referred to as the ground and authority for the intended mode of proceeding.

Waterloo Bridge Construction is open to the following Objections. First, The mode of founding in cofferdams and piling to receive the piers. The natural bed of the river is a gravel, and a blue clay under. This is a good and sufficient foundation; and is injured, not mended, by piling. At Waterloo Bridge, by driving the piles, the bed was wholly disturbed and raised into a sort of puff paste, whereby the competency of the natural bed was destroyed, and the dependence is wholly on the piles, whose feet stand on a stratum no better, except that being deeper it has been less disturbed by the piling. The insufficiency of such foundation was exemplified at Orleans Bridge, in France, where the body of one of the piers went down with its load nineteen inches, and the cutwaters were entirely broken off.

Second, The mode of connecting the springing of the arch with the cutwaters of the piers has a discrepancy very offensive to an eye at all conversant with the principles of construction. There is no obvious workmanlike mode of constructing them as there exhibited. The arch stones appear at the springing to be reduced to a point; and although we may guess that they are continued in some secret way behind the façade of the pier, yet we are satisfied it must be a great drawback on the solidity of the one or the other.

Third, The mode of projecting the piers beyond the face of the bridge (and which, in the late Mr. Rennie's model, is excessive) is useless for stability, possibly dangerous; and certainly an unnecessary expenditure. When the piers of Orleans Bridge went down, it broke away from the cutwaters, notwithstanding the grating of whole timbers connecting them; and left the cutwaters at their original level. At Waterloo Bridge the arches are settling away from the cutwaters, and the bed of the river having been loosened and raised by pile-driving, the settlement will continue to increase probably for some years, before it becomes consolidated; and time only can determine whether the sand and tenacity of the material will be sufficient to resist a more dangerous separation. The uselessness of the projecting cutwaters for stability is, therefore, demonstrated. For the purpose of dividing the stream, they are far short of what the case demands and what science can effect.

Fourth. Regarding the trussed centre. A dissected model of one of the arches of the design of the late Mr. Rennie was exhibited for a day or two on the table of the committee room, with a model of the trussed centre under it. In the presence of several members, it was pointed out to be a copy in principle of the Blackfriars and Waterloo centres; that it was defective, in as much as it contained no principle to resist change of form

when partially loaded, as is the case in the progressive building of an arch; that it had, consequently, failed at Blackfriars and at Waterloo Bridges. At both those places the defect was helped by loading the crown of the centre previously to building the haunch of the arch. But this is a clumsy and unscientific way of overcoming the difficulty, and does not fully answer the purpose. The centre still undergoes continual change of form by the progressive loading. The arch, of course, participates in this change of form; and its stability is thereby impaired, if not endangered. The form of the arches at Waterloo Bridge is evidently much crippled, and at Blackfriars' Bridge considerable spaults took place. At Waterloo Bridge, the excellence of the stone was sufficient to resist spauling; and the injury is there limited to the unsightly distortion of form.

Upon the whole, to those who are conversant with the history of bridge-building, and with the best examples, this design of the late Mr. Rennie is, in art and science, a retrograde movement; and, if it should be carried into effect, will be a disgrace, instead of an honour, to the city.

Regulated by these principles, I formed the design which I delivered to the committee; but the committee was pleased to stop me in the explanation thereof; alleging that it was unnecessary for me to repeat anything that had been committed to writing in my papers, which were already before them, as those papers would be printed, and a copy given to every member. There is in them, as I conceive, matter sufficient to deter the adoption or repetition of the principles of Waterloo Bridge construction; but I am fearful the elucidation of these my principles has not been read.

If it were a question of taste only, such as to decide an elevation, or the decoration of it, I should remain silent; but, as the question is upon principles of construction, implicating stability and security, which are capable of being discussed with logical precision; and, correct conclusions being deduced therefrom, I think it right to press their consideration.

In my design there are the following improvements on the usual mode:—

The arches virtually spring from the bed of the river, by which there is no lateral pressure beyond the pier, and every arch is independent of its neighbour. And I am ready to produce a responsible person, who will undertake to build the middle arch first and alone, and deposit ample security to remove it in case it does not incontrovertibly establish the principle.

From the mode of construction, the apparent springing may be made where most desired, which should be not lower than high-water mark, but rather at the height of the highest floods; thus the greatest water-way is obtained where it is most wanted.

The shape of the pier presents the only form which divides the stream with greatest facility, and allows it to pass with the least danger of undermining the pier.

The shape is, also, the best for receiving and supporting the weight of the arches, and for spreading that weight in the most ample manner on the bed of the river. In both arch and pier, the line of pressure is ascertained by a simple mechanical process; and the joint is, in all cases, cut at right angles to the line of pressure; thus the whole of the contiguous surfaces of the stones of arch and pier bear on each other; whereas, in the usual construction, nearly all of them perch on one edge or the other.

The advantages of this invention are, that the construction is rendered more easy, the stability more certain, the convenience greater, and the expense much less.

As regards the trussed centre, I have produced a model of one which has been used, and was fully proved to resist all change of form during the building of the arch.

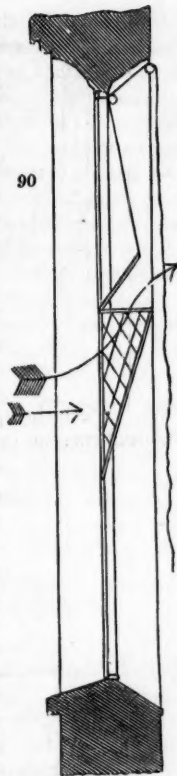
The amount of my estimate is 280,000*l.*; and I have responsible builders ready to guarantee, by the most ample security, the complete execution at that amount.

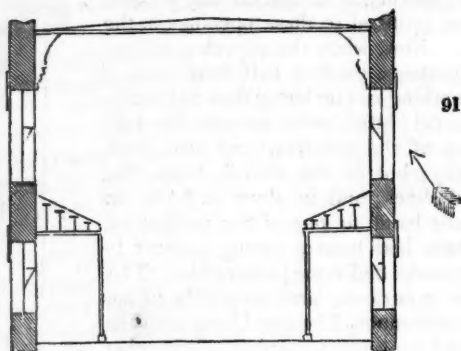
ART. IV. *On the Ventilation of large Buildings by the Intervention of Openings in the Windows.* By R. MALLETT.

WHEN in Liverpool, last September, at the meetings of the British Association, I went once to St. Jude's church. This edifice, which is in a sort of Gothic style, presents, when filled with people, a very imposing interior; partly from its magnitude intrinsically, but much more from this property not being, as it is so often, frittered away by innumerable divisions and subdivisions of parts, in the arrangement of ornaments on walls and ceilings. The ceilings are in this church particularly good, being simply divided across by the tie-beams (or representations of them) of the roof principals, which are moulded in a very bold style, and terminate at the walls in rich open Gothic brackets. The under line of these mouldings passes level and straight across, while the ceiling forms a large angle at the centre, probably of about 160° ; thus giving an aspect of great strength and solidity. But to the point. There are two rows of windows at either side, one over and one under the galleries; and each window has a considerable portion of the sash cut out, and inclined inwards, and so fixed; with glazed sides and an open top, furnished with a glazed lid to open and shut by a cord. *Fig. 90.* is a section of one of these, which represents them all, and is sufficiently plain without reference. The doors are judiciously contrived to prevent the currents of air which are often so distressing in

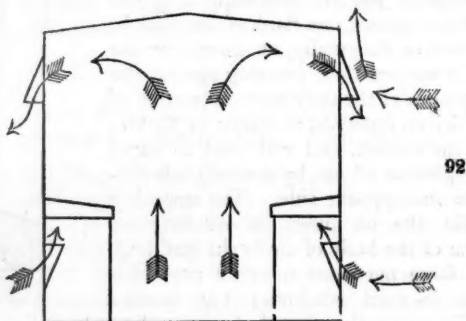
churches ; and hence ventilation may be considered as confined to these openings in the windows. Now, while the church is filling, and for, perhaps, the first half hour or so of service, nothing can be better than the ventilation : a delightful *aura* spreads through every part of the building, and feels fresh and breezy ; but as the church heats this rapidly declines ; and in about an hour, on putting my hand to one of the ventilators, where there had been a strong current in before, I could find none perceptible. This struck me as curious ; and, on a little subsequent consideration, I believe I have seen the cause ; and, as a great number of churches and other buildings are ventilated in this way, I have deemed it possibly worthy of notice in your Magazine.

Referring to *fig. 91.*, and supposing the wind to blow against one flank of the church, either direct or diagonally, as shown by the arrow, it is obvious that, pressing against the inclined planes of the ventilators, a portion of it will be driven upwards, as shown in *fig. 90.*, and into the church, and will tend to expel a certain portion of air, by a retrograde motion from the opposite side. The opposing forces that the air meets in entering are the inertia of the body of air in the building, and the force necessary to expel part of it from the leeward windows ; but, besides this, as the air in the church becomes heated and ascends, it has a tendency to lodge above the upper row of windows, and, from the commencement of the process, gives a greater freedom of entrance to the fresh air below than above ; but, as soon as the hot air above has increased so as to have reached the level, or below the top, of the upper row of ventilators, the whole or a part of the current through them becomes stopped, depending on the temperature of the upper region ; because this air to be displaced by fresh air, requires to be depressed into air colder, and hence denser, than itself, owing to the structure and position of the ventilators ; so that, in fact, at a certain period, dependent on the circumstances of external and internal cooling and heating agencies, the heated air becomes itself a valve to stop out the fresh air. Now the remedy for this is very plain ; and consists merely in inverting one set or range of ventilators, as in *fig. 92.* where I have represented a section of the church merely by





lines. Here the upper ventilators are inverted; so that a lateral external current, instead of, as before, being urged by the inclined



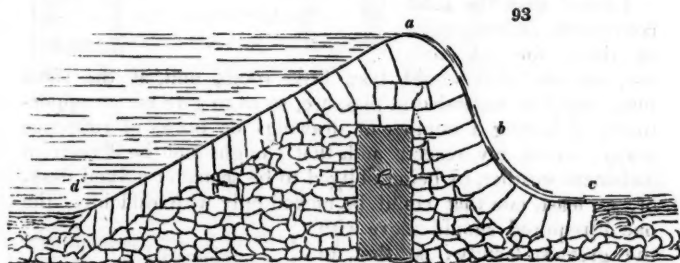
plane against the issuing hot air, is deflected upwards by it outside the building; while the slope of the ventilator gives at both sides free egress to the heated air, at the same time that the position of the lower ventilators is the best possible for freely admitting the external atmosphere. This is shown in the figure by the directions of the arrows, together with the ascending currents of heated air. The protection from rain is equally good in either case; and this latter modification would appear to afford a very good and efficient system of church ventilation.

It is very likely that all this, and much more, may have occurred on this subject to you and many of your correspondents, it was, however, new to me.

94. *Capel Street, Dublin, Feb. 10. 1838.*

ART. V. *On the most proper sectional Form to be given to Weirs or River Dams.* By ROBERT MALLETT.

THE section of weirs or dams, when of masonry, appears, in most instances, to be pretty nearly a rule of thumb business, with the exception of some examples by Mr. Telford. The model of an earth embankment appears to have been adopted for stone ones, with but little care either as to the best position for the stones of the masonry, for maximum strength, or as to the outline that would give the easiest descent for the falling fluid, and, by consequence, the least wear and tear to the structure. Not to encumber your pages with a parade of analysis, I shall just state the results I have arrived at, and leave your mathematical readers, who will at once see what I would be at, to judge for themselves; while the practical man can discern from the figure whether the positions and forms I have assigned to the stones of the masonry are the most suitable. Supposing, then, the plan of the weir to be an arch pointing up the stream: I conceive the line of section, from *d* to *a* in *fig. 93.*, should either be



a right line (or, possibly, a parabolic segment, presenting a convex inclined surface to the water in very deep streams). The line from *a* to *b*, I consider, should be a parabola, to which the water-level should be a tangent; because this curve gives the easiest change from direct to curvilinear motion, and hence with the least expenditure of force. Lastly, I think the line from *b* to *c* should be a cycloid, as being the curve of quickest descent; so that the combination of these two curves will fulfil the condition of giving the easiest change of motion to the water, from a rectilinear to a curved, and back again to a rectilinear, possible, and hence the minimum wear and tear to the structure; while they possess the coordinate property of a judicious form to resist the hydrostatic pressure.

I believe a weir thus formed would cause the fluid to descend in every part in an unbroken sheet, and produce little or no ripple below it. I also think the principles of the form proposed are now for the first time stated.

For weirs subject to waves, certain modifications are required; but the investigation of these is plainly out of place in this Magazine.

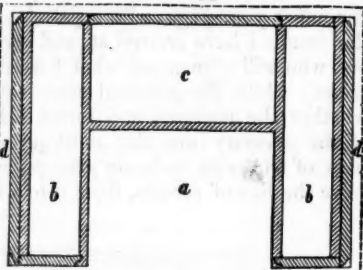
94. *Capel Street, Dublin, Feb. 10. 1838.*

ART. VI. *An Architect's Desk.* By E. B. LAMB, F.R.I.B.A.

I HAVE recently had a new desk made; and, as it comprises some things which, perhaps, are novel, I send you five sketches of it (*figs. 94. to 98.*), together with some of the reasons which led me to adopt this design; though, as a production of my own, I may show a greater degree of partiality for it than it merits.

I found that the most convenient drawing-table or desk, for my own use, was one that would take little room, and, at the same time, could be extended at pleasure, so as to give me an opportunity of having a number of drawings or books of reference always within my reach; and, that I might not be frozen in inclement weather, by being obliged to be seated at a fixed desk, or, at least, one that could be moved only with difficulty, the one I required should move with the greatest facility; so that, in whatever situation I might choose to place myself in my study, little more than the mere will was necessary to obtain it.

A flat table I considered objectionable to draw upon, for obvious reasons; and a movable support for a drawing-board I have always found to be inconvenient; therefore, an inclined desk was determined upon, as, on removing the drawing-board, a writing-desk is obtained. The means of extending the top by flaps (*figs. 96. and 97.*) is the most simple and expeditious I could devise. I found it desirable to keep the centre part higher than the sides, in order that, when the centre is occupied by a drawing-board, which may extend somewhat over the flaps, they being lower, drawing-



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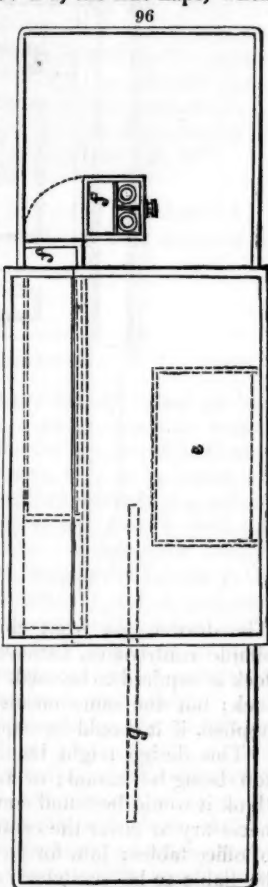


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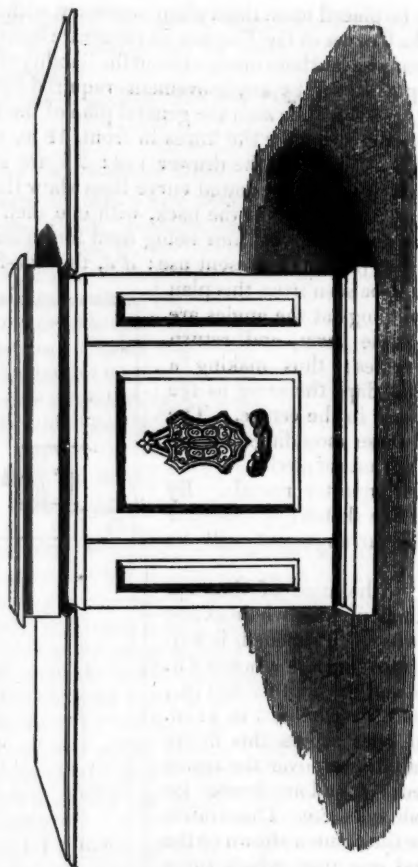
boards may be placed upon them when necessary, without being in the way of the free use of the T square on the centre board; or books and papers may be laid here open, without the liability of their being injured or pushed off by any movement required by the centre board. In *fig. 94.* will be seen the general plan of the lower part; in which *a* is the space for the knees in front, 18 in. wide, 13 in. deep, and 25 in. high to the drawer rail: *b b* are side closets, with one shelf in each; the dotted curve lines show the way these closets open: *c* is a closet at the back, with one shelf for books, papers, &c.; the closets in front being used for rolled up drawings, and other papers in present use: *d d*, the side-flaps, when down. It will be seen from this plan that the mouldings at the angles are all of the same form, and return round the sides; thus making a border to the flaps the same as the one to the desk in the centre. The sections of these mouldings are necessarily quadrants of circles, or what workmen call quarter rounds. By the perspective sketch (*fig. 98.*) the effect of this arrangement will be seen.

Fig. 96. is the plan of the top, with both flaps up; the whole extent of which, when thus opened, is 6 ft. 9 in.; the top of the desk alone is 2 ft. 11 in. wide, and the depth 2 ft. 1 in.; the flaps are 2 ft. 1 in. by 1 ft. 11 in. The dotted lines at *e* in this figure show a small drawer, over the recess for the knees; *f* is a long drawer for pens, pencils, wax, &c. This drawer is divided in the manner shown on the sketch; and one part, which turns nearer the hand, is supplied with ink-stands; the dotted lines in the upper part show the situation this drawer occupies; and the dotted lines at *g* show the situation of the bearers of the flaps, which bearers draw out from under the desk.

Fig. 95. is an elevation of one of the sides. The back, with the flaps up, is shown in *fig. 97.* *Fig. 98.* is a perspective sketch, showing the appearance when the flaps are down.

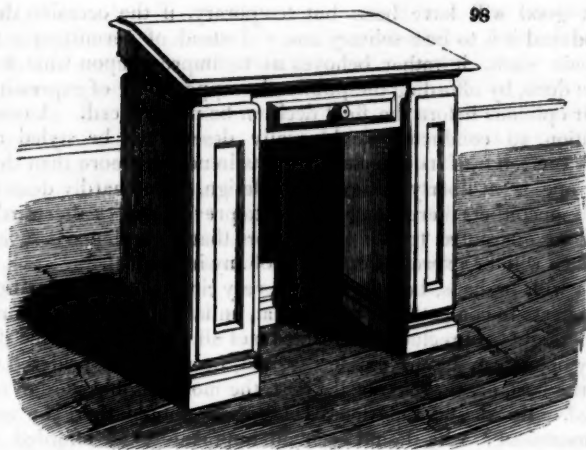


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The drawer, the front closets, and the desk are, by a very simple contrivance, fastened at the same time; and only one lock is required to be used. The closet at the back has a separate lock; but the same means of securing this at once could be applied, if it should be required.

This design might be useful for a small library, the centre top being horizontal; or as an office or counting-house desk I think it would be found convenient. It would then, perhaps, be necessary to cover the centre top with leather, in the usual way of office tables; but, for an architect's desk, a leather top would be liable to be scratched and defaced by drawing-boards. It might display a great deal of ornament, or be constructed with



ornamental woods. The one I have had made is of wainscot; my object being to obtain convenience combined with neatness and simplicity.

London, Henrietta Street, Feb. 1838.

ART. VII. *The Royal Exchange Competition.* By CANDIDUS.

ALTHOUGH nothing has been yet definitively settled (at least, not announced to the public), there is some reason to suppose that there will be a public competition for the Royal Exchange; and, should such really prove the case, it is to be hoped that both the public and the profession will strenuously demand, not only an exhibition of all the designs, but that it shall take place *before* the choice is actually made. I made some remarks to this effect, which were inserted in the Number for February; but, as I do not find they have been seconded by any of your other correspondents, either enforced by the expression of a similar wish, or noticed for a contrary purpose, I beg leave to revert to the subject, and to state more pointedly what I conceive to be valid reasons for adopting such mode of proceeding.

Even the *after* exhibition of the designs for the Houses of Parliament was a great step towards a better system. It did a great deal of good, if it was only by calling public attention to architecture, and by rendering, for the moment at least, the subject one of general interest. There can be no doubt that this exhibition caused architecture to be the topic of more conversation and discussion during those two or three months, than had been bestowed upon it during the ten years previous. Yet

that good will have been but temporary, if the occasion that produced it is to be a solitary one. Instead of permitting it to remain such, it rather behoves us to improve upon what was then done, by affording the public the opportunity of expressing their opinions before the final decision be pronounced. A competition so conducted would really deserve to be styled an *open* one; but, if its openness consists in nothing more than that any one is at liberty to send in a design, it can hardly deserve such an epithet; there being nothing to prevent *secrecy* afterwards, and to guarantee to the competitors that no undue arts or influence will be exercised in favour of any individual.

It will, perhaps, be said that the very circumstance of inviting architects to competition, whether an unlimited or limited number, ought to preclude the suspicion of all unfairness; since the only object can be to obtain the best, or what is considered to be the best, or, if even not the best, the most eligible, design offered. Be it so; but then, I ask, why should there be any concealment? why should even an opportunity be afforded to suspect, or make others suspect, any sort of unfairness; or to say, as has been done ere now, that advantage was taken of something in another design? I have heard it argued, that an exhibition previous to decision would not only imply mistrust in the competency of those appointed to be judges, but would tend rather to embarrass than facilitate their choice, in consequence of the variety of conflicting opinions they would hear expressed beforehand. I do not at all see this: in the first place, so far from implying that they were inadequate to their task, and, possessing no judgment of their own, required to be directed, if not dictated to, by that of the public, it would afford presumption that the parties accepting such office were individuals who felt confident that they should be able to justify their decision, even though it might be impugned by many. In the next place, it is to be presumed that, instead of being at all perplexed or embarrassed by the various comments of the public, they would have no difficulty in distinguishing the reasonings of sound criticism from futile censure or praise. To a certain extent, indeed, they would and ought to be guided by the opinions so elicited; that is, they would weigh the matter more maturely than they otherwise would do, and have their attention directed to what might else escape it; yet this is a very different thing from being swayed by popular opinion, without venturing to exercise any opinion of their own.

It may further be objected, that an opportunity would thus be afforded for much caballing and intriguing, as the parties most interested in the decision would endeavour, either directly or indirectly, to recommend their own designs by favourable comments on them, inserted in the public papers and journals; and

here, I conceive, lies the objection, — all, in fact, that can be objected, against the scheme of a previous exhibition. Nevertheless, I do not consider it an insuperable one; partly for the reason above assigned, namely, that the judges could hardly be swayed to adopt a design undeserving preference; and also because intriguing of the sort on one side would be neutralised by counter-intriguing, perhaps I should say counter-statements, on the other. Knowing that they were liable to be instantly met by some adversary, people would be rather cautious or shy of attempting to advocate that whose title to preference they could not, in some way or other, make tolerably good; for it is hardly to be imagined that those who entertained a different opinion would choose to remain silent on so important an occasion. Some of the discussion thus provoked might be interested and angry: it would elicit much bad criticism as well as good: still it would be discussion; and that is, at all events, better than indifference and apathy. People would begin to find out the necessity of studying, at least of making themselves tolerably acquainted with, the subject, lest they should commit themselves, and betray their ignorance.

The first experiment of the kind has proved that the affording the public an opportunity of examining and comparing all the designs sent in on that occasion drew an unusual degree of attention to the subject of architecture, and was the means of rendering it one of some interest even to those who were before quite indifferent to it. Such having been the case when, the prizes having been previously adjudged, all that was afforded to the public was the opportunity of satisfying their curiosity, and ascertaining how far the choice itself appeared to have been a satisfactory one, it is no more than reasonable to presume that they would be incited to a far more diligent examination, and by other motives than curiosity alone, when they felt themselves in some measure appealed to, and were aware that the proper expression of their opinions would meet with due consideration. The competitors themselves, on the other hand, would be spurred on by a double stimulus; foreseeing that, whether they succeeded or failed in the main point, the merits of their drawings would be warmly canvassed, and their interest, perhaps, obstinately espoused, by those who, having once declared in their favour, would not retract their opinion, if they could possibly defend it.

By no means do I pretend to affirm that such a mode of competition would not be violently objected to by many professional men; and that for reasons easier to be discerned than openly defended. The question, however, is not what mode is best calculated to promote the interests of particular individuals, and prove agreeable to them, but what is most likely to

excite emulation, and to advance the art itself. At all events, I say, *Pac periculum*, Make the experiment: should it prove a failure, should none of the advantages proposed by it have been attained, we can then very properly revert to the system hitherto followed, under the conviction, then forced upon us, that, objectionable as is it in itself, it is, nevertheless, the best.

REVIEWS.

ART. I. *An Address on the Subject of Education, as connected with Design in every Department of British Manufacture; together with Hints on the Education of the Poor generally.* By Geo. R. Lewis, Author of "Anato-Chirurgical Views," &c. Pamph. 8vo. 1838.

MR. LEWIS is well known as an eminent artist, who has published a series of anatomical plates, displaying great knowledge of the subject and artistical skill; and also a series of etchings, portraying the physiology, manners, and character of the people of France and Germany. In the work before us, he proves himself to be a man of enlightened mind and benevolent heart, and, at the same time, highly patriotic in his views. We should not feel ourselves justified in giving a detailed analysis of Mr. Lewis's "Address" in a magazine devoted to architecture: nevertheless, as the improvement of architecture is one object of Mr. Lewis's plan, we consider it our duty strongly to recommend this pamphlet to all who take an interest in the subject, and to give one or two extracts, to show the essence of the author's ideas on the subject.

With respect to the education of the poor, Mr. Lewis observes—

"Let a National System of Education be fully gone into by the Legislature, and based entirely upon a thorough knowledge of human nature, and we shall then have no genius wasted, no faculty lost. All will then be made the most of, and turned to good account. Soon, then, should we see this nation rise in the greatest of all her resources, manufactures, which it is at present so much in need of. Our manufactures have long suffered through the arts being at such an immeasurable distance from them. The designs which constitute the ornamental part of our goods being imitative instead of inventive, keep us in the background, and lower us into the degraded state of servile imitators which no nation in the scale of intellect should ever allow itself to be.

"To raise ourselves from this state of degradation, we should establish schools of art in every city and manufacturing town throughout the United Kingdom, that the rising generation may no longer be excluded from that source out of which so much valuable knowledge springs. Such schools of art should be formed for the purpose of opening the wide field of nature, that the true foundation may be laid in the minds of our youth in early age; that the only materials for forming new arrangements and combinations may, as soon as received, be permanently held, and thus enable them to lay up a never-ending store of information; that design, original thinking, and invention may have a perpetual supply of that food which will at all times keep it in a high state of vigour and activity.

"To effect this, the groundwork must be the construction of those geometrical problems that are necessary to the comprehension of perspective, the only foundation for accurate delineation of all forms, whether artificial or natural.

"There is one point, above all, I consider to be of the greatest consequence in the instruction of youth as regards design; that is, the greatest care should be taken by the instructors not to enforce their notions (or any others') of design in the demonstrations to the students, as that would have a tendency to destroy the peculiar combinations, arrangements, contrivances, and other original qualities of their minds, and, consequently, put a stop to original thinking, which would otherwise be evinced, if the peculiarities of one mind were not drilled into the other. The instructors should, to the utmost of their power, show how far natural forms and colours may be arranged, combined, and contrived in every variety of way to accomplish the design required. And, when those of the ancients may be thought necessary to be produced for the same purpose, they should only be so to show the use they made of the like materials for effecting the same object, but not for imitation: on this too much cannot be said, that all designers may be made originals.

"Common sense, above all things, should be considered first, and infused into their young minds as early as possible, that they may have a thorough knowledge of the various things that are used and connected with the employment of which they are likely to enter into for their subsistence.

"A natural system should be established, that natural qualities may be demonstrated, by which means only can their faculties be properly exercised and perfected."

According to our ideas of what a national system of education ought to be, all children whatever should be subjected to the same degree of education from infancy till they attain a certain age; say from 14 to 16 years. None ought to be taken from school, or put to work sooner. The degree of education which all should receive, should include all the useful and agreeable knowledge which children are capable of acquiring previously to the age mentioned, according to the most improved modes of teaching, commencing with infant schools. At the age of 14 or 15, it will then be time for the parents to consider what is proper to be done, with a view to the future welfare of their children, and to direct the remaining part of their education accordingly. Children whose parents could do nothing further for them would be taken from school, and put out as assistant servants, labourers, or mechanics; while the more wealthy would continue their children at school, commence a professional education, or send them to college, &c. Ten or twelve years ago, when we used to advocate this doctrine of high and equal education to all, we were told that we should unfit children for manual labour, and that the result would be that it would be impossible to get servants, &c. The public, however, are, we believe, now generally convinced that the relative differences between individuals would still be so great, that there would be just as great a proportion of the population ready to become servants and labourers as there is at present. To be convinced of this, it is only necessary to observe the differences which

exist in the taste, knowledge, abilities, and pursuits of the very highest classes who have been highly and equally educated. But enough in this place. We regret to observe that the country generally is not yet fully aware of the importance of this subject.

ART. II. *A Treatise on Engineering Field-Work ; containing Practical Land-surveying for Railways, &c.; with the Theory, Principles, and Practice of Levelling, and their Application to the Purposes of Civil Engineering : also, Parish and Subterranean Surveying, with Sectio-Planography, and every Information necessary to be known in the elementary Parts of Civil Engineering ; with Descriptions of the best Instruments used in Surveying and Levelling, their Adjustments and Methods of using in the Field. Illustrated by numerous Plates and Diagrams.* By Peter Bruff, Surveyor, &c. 8vo, pp. 162, and 8 plates. London. 10s. 6d.

THIS is a work much wanted at the present time, and which could not have been produced, had there not been, for the last seven years, so many surveys made in all parts of the country, for the purpose of determining the lines of railroads, and making arrangements connected with them. It is also very justly observed by the author, in his Preface, that no treatise on surveying has "been published since the fine mathematical instruments at present in use have been considered a necessary adjunct to the successful prosecution of land-surveying." The *Engineering Field-Work* may, therefore, be confidently recommended to all engineers and surveyors, as at once new and practical.

ART. III. *Catalogue of Works on Architecture, Building, and Furnishing, and on the Arts more immediately connected therewith, recently published.*

THE Carpenter's and Joiner's Pocket Director : containing the most useful and select Prices of Carpenter's and Joiner's Work, &c. ; comprehending advantageous Tables and Calculations, with a Variety of other Information of practical Utility ; including, also, a copious List of the Trade, &c. By John Bennet, Engineer, &c., Author of "Artificer's Lexicon," &c. 12mo, cuts, pp. 232. London, 1838. 4s.

A useful little work, of the same nature as Bennet's Engineer and Pocket Director, noticed in p. 130.

The Bricklayer's, Plasterer's, Stone-Mason's, and Slater's Pocket Director ; comprehending select and useful Prices applicable to those Trades : also, valuable Tables and Calculations, with other Information of practical Utility ; including a copious

List of the Trade, &c. By J. Bennet, Engineer, &c. 12mo, pp. 82. London, 1838.

The lists occupy 42 pages, and the rest of the work 82 pages; so that it is sufficiently dear at 3s. It is true there is a frontispiece of the Houses of Parliament on fire; but, as that is of no manner of use in a work of this kind, it goes for nothing.

The Arcanum: comprising a concise Theory of Practical, Elementary, and Definitive Geometry; exhibiting the various Transmutations of Superficies and Solids; obtaining, also, their actual Capacity by the Mathematic Scale, including Solutions to the yet unanswered Problems of the Ancients. By John Bennet, Engineer. Parts I. and II., 8vo, plates. London, 1838. 2s. 6d.

This work is to be completed in sixteen parts, with upwards of 600 engravings. The frontispiece contains a figure entitled "The Problem of Napoleon Bonaparte to his Staff," of which the author gives the following history:—

"The frontispiece to this work commences with the sublimely beautiful problem of Napoleon Bonaparte to his staff. The manner of obtaining this very valuable and desirable axiom is as follows:—During the publication of the work entitled 'Geometrical Illustrations,' and on the 9th of May, 1836, a paper was left for the author thereof at the publisher's. The following is a literal copy, viz.:—

"'Napoleon, on his voyage from Egypt, amused himself and staff with circular geometry: what circular geometry might be was only to be collected from the tradition, that the problem given by the future Emperor was "To divide the circumference of a circle into four equal parts by means of circles only." The story, however, created the impression, that the idea which had passed through the mind of that eminent practical geometer was, that in the properties of the circle, or still more probably in the sphere, might be discovered the elements of geometrical organisation.'" (Introduction, p. 1.)

The Churches of London: a History and Description of the Ecclesiastical Edifices of the Metropolis. By George Godwin, jun., F.S.A., Associate of the Institute of British Architects. Containing Views of St. Mary Somerset; St. Vedast, Foster Lane; and St. Nicholas Cole Abbey. Engraved by Le Keux and S. Williams. No. XVI., 8vo. London, 1838. 1s.

The present number completes the first volume of this very beautiful and singularly cheap work. Among other enjoyments which we promise ourselves, when we have sufficient leisure, is that of making a tour of all the churches and churchyards within the ancient city of London; and this is the work which we should take as our guide.

No. xvii., the first number of the second volume, has since been received.

Memorials of Cambridge: a Series of Views of the Colleges, Halls, Churches, and other Public Buildings of the University and Town

of Cambridge. Engraved by J. Le Keux, from Drawings by F. Mackenzie and J. A. Bell; with historical and descriptive Accounts of the Buildings, &c. By Thomas Wright, M.A., F.S.A., of Trinity College, Cambridge, and English Correspondent of the Historical Commission appointed by the Government of France. No. VI., 8vo. London, 1838. 1s.

It may be sufficient to state of this work, that it is a fit companion for the *Churches of London*. We regret to find that Mr. Le Keux is in a precarious state of health; and that, finding it necessary to abstract himself from professional labours for some time, the publication of the work is of necessity postponed. Nearly all the drawings, however, are made, and the work will ultimately be completed.

Report of the Committee of Management of the Association for the Promotion of the Fine Arts, called the Art Union of London, for the Year 1836-7. Pamph., 8vo, 22 pages.

The object and present state of the Art Union having been noticed in preceding Numbers, and, very recently, in p. 227., any further details here would be superfluous.

Observations on a proposed Line of Road from Shotley Bridge to Middleton in Teesdale, forming, with existing Roads, a direct and easy Line of Turnpike Road from Newcastle upon Tyne to Brough, Lancaster, Preston, and Liverpool. By T. Sopwith. Pamph. 8vo, 16 pages.

Like all Mr. Sopwith's writings, this tract is fraught with practical knowledge, and enlightened and extensive views; but, its main objects being local, we should not feel justified in devoting more space to it than a passing notice.

ART. IV. *Literary Notice.*

THE History of the Edifice of the Metropolitan Church of St. Peter, York, illustrated by Extracts from the Records of the See, &c., by Plans and Sections, and by Drawings of the Embellishments, by John Browne, Artist, &c., will shortly appear, and be completed in about 25 numbers.

Illustrations of the London and Birmingham Railway, sketched from nature, and drawn on stone, by John C. Bourne; with topographical and descriptive accounts of the origin, progress, and general execution of that great national work, by John Britton, F. S. A. The work will consist of 32 prints, showing so many of the remarkable scenes and buildings at and between the termini of the line. It will correspond in size and style of execution with the works of Harding, Roberts, Lewis, and Stanfield.

MISCELLANEOUS INTELLIGENCE.

ART. I. General Notices.

BRITISH Artists and Writers on Art.—There is an excellent article on this subject in the *British and Foreign Review* for April, in which the writer has pointed out the erroneous principles laid down in Sir Joshua Reynolds's *Discourses on Painting*. This had been previously done, to a certain extent, by Hazlitt, in his *Essay on certain Inconsistencies in Sir Joshua Reynolds's Discourses*, to which, however, justice was never done by the public. The chief error which Sir Joshua committed was in denying that there is such a thing as natural genius; an opinion which was fashionable, both in Britain and France, from the time of Helvetius and Burke down to the present century, and which still prevails among a number of persons in this country. The common sense of mankind always declared the contrary opinion, as many familiar expressions in common use amply testify; such as "capacity of mind," "strength of parts," "original powers," "natural faculties," &c. The article occupies nearly fifty pages, and is well worth the price of the Review. But there is another article, on the prospective Changes in Mechanics, occupying upwards of thirty pages, which induces us to recommend every young architect to peruse the number if possible.

The prospective Changes in Mechanics are the substitution of locomotive engines on common roads for railroads; the use of Hague's pneumatic transfer of power in such a manner as to distribute those manufactories which are now crowded together in large towns, like Manchester, all over the country, in villages. As minor changes may be mentioned, the use of distilled water in steam engines at sea; the application of the voltaic battery as a primary power; greater width between the rails in railways; lighter railway carriages; the construction of steam craft for war, &c. If what is stated by the reviewer, respecting the superiority of steam carriages on common roads to steam carriages on railroads, should prove true, the result to those who have sunk their money in railways will be most disastrous. (*British and Foreign Review*, April, 1838.)

Railroads.—Railroads are monopolies, and must ever remain so. "As an investment of capital, the railroad appears to be among the worst in point of security, and the most questionable in point of interest. Liverpool and Manchester are admitted to be the two greatest points of intercourse for goods and persons in the kingdom; that railway is said to have paid from the returns about nine per cent per annum. Is that sufficient interest for the quality of the security? Should another railway, or any other method of transport as desirable, be established, what becomes of the interest on the interest on the capital invested? What is the actual value of the property, iron, wood, bricks, buildings, and engines, of any railway? Not a fiftieth part of the sum expended. What, then, is the actual security for the capital invested? It is reduced to the probability that the road will continue for ever to monopolise the transit of that particular line; a probability which every engineer is slyly smiling at. If the most promising line of railway, with a monopoly, can only return nine per cent, what will the others of less promise return?"

"The London and Birmingham railway will sink six millions of money; the interest of that sum, at five per cent, is 300,000*l.* per annum; add as much more for expenses, and that will be a minimum, and we have 600,000*l.* per annum, to be gained, so as to pay the shareholders five per cent, and to keep their railway in order, in all its branches and details. Should any cheaper and as efficient method of travelling in that direction be established, what would be the value of the shares? The younger Brunel, a man of spirit and talent, must have seen that railways on the same construction as those of Liverpool, London, and Birmingham, were not sufficiently advanced to realise the promises so profusely made, and has therefore determined to endeavour to improve on those lines of railway, and has succeeded."

Steam Carriages on common Roads. — There is no doubt that steam carriages on the common roads are under perfect control; are the safest steam machines ever used; are to be propelled at great velocity; are capable of ascending the loftiest hills; and of being regulated in their speed down any descent. They are not to be stopped by snow which is not high enough to cover the engines; and, even in that case, a proper front would open a passage where horses could not work. In weather like that which now prevails, the roads are superior for locomotive carriages to railways, as they present as hard a fulcrum, with as much more surface friction as to allow the engines to work with the greatest effect. In summer, they make no dust; in winter, they can be kept at any required temperature; as the fire is behind, no ashes come in contact with the passengers, as on the railways; the motion is the easiest known; and there is less noise than in a common carriage. Can any mechanic or reflecting man doubt that those vehicles will not soon be placed on the roads? As soon as coachmasters, innkeepers, and the proprietors of property on the common roads, feel the injury that must ensue, if the whole transit is diverted from them to the railways, they will come forward and support the application of steam mechanical power for carriage of persons and goods. Where the roads are so soft (which is the worst condition they can present to a steam carriage) as to retard the required velocity, they will be made hard; where the hills are very steep, they will be lowered, though that is by no means necessary; and where rough they will be made smooth. The concrete road, of which there is a specimen beyond Lower Grosvenor Place, towards Vauxhall Bridge, is, taking into consideration every circumstance, superior to a railway for practical purposes. On a well-made road, consisting of hill, and dale, and level, a steam carriage will go at the rate of twenty miles an hour, carrying thirty persons, and the usual quantity of luggage, either on the vehicle or in a covered cart behind. The average number of persons who go on a train in the Liverpool and Manchester line is sixty, and generally a second engine is required to assist their ascent up the inclined plane: it follows, mercantilely speaking, that there is little or no difference between the railway carriage and the vehicle destined to run on the common roads. When the expense of a railway, and all its appendages, are brought into the calculation, the balance is decidedly in favour of the common road.

It has been said by the uninformed that the wear and tear on the roads would be so great as to prevent steam being applied for that purpose. Now, those who possess the greatest experience know that the wear and tear of the steam carriages on the common roads is not one half as great as on the railway; and, if the roads are made all as good as the great western or the northern road out of London, the wear would be still less. By the employment of steam on the roads, monopoly, which the railways foster, would not be upheld; the money and the interest lent on the tolls is secured; from the improvement of the roads all the community would be benefited, and the steam carriages rather roll than injure the surface. (*British and Foreign Review*, April, 1838, p. 702.)

Enough has been said to put the public on their guard against the mania for railways; and, perhaps, to turn their attention to the approaching substitution of mechanical for animal power on the common roads. (*Ib.*, p. 703.)

Hague's transferring Power. — "Our manufactories are, for the most part, erected where coals are to be cheaply and readily obtained, as they constitute at present the means of obtaining power. Thus, thousands and tens of thousands of human beings are crowded together in narrow streets and alleys, canopied, not by the sky, but by clouds of smoke and deleterious gases. When masses are so congregated, the heterogeneous collections are more difficult to bring under municipal regulations, and more difficult to civilise by moral and religious instruction, while greater facilities for vice are afforded. The necessity of manufactories being localised once destroyed, and a new era must commence. Two methods now exist which will gradually effect the change: one is perfected, and in operation; the other is as yet in embryo, but

so far advanced, that the result may be looked on as certain. We will briefly describe the former, first in general terms, then in detail. The general term is, the method of transferring power. The greater the distance it is transferred, the more perfect will be its action. It can be subdivided as numerously as the gas which illuminates our streets. It is inodorous, innocuous, not perceptibly affected by heat or cold; it will neither burn, explode, rust, nor corrode; it may be conveyed from the same source, so as to be made to forge an anchor, which will hold the largest ship, or to fabricate the finest lace. The ocean-tide; the current of a river; a mountain torrent; may be made a source of power, producing effects in exact proportion to the original velocity or weight. Any primary power, whether fire, water, or wind, may be transferred with unerring certainty. We may live to see the waters of the Humber working the machinery of Leeds, Halifax, and Bradford; and the power of the Mersey conveyed by the side of the railway, to perform the same labour at Manchester and the neighbouring districts. We may, and blessed be the day! live to see our pyramids of manufactories, with their living masses, converted into villages, and systems of domestic industry, where the parent may work his loom, aided by his child, and yet the whole be under superintendence and regulation; and where even the quantity of power used will be unerringly registered, and, consequently, the quantity of work which has been done exactly known; where, instead of an atmosphere loaded with smoke, steam, and effluvia, may be for ever seen the clear vault of heaven; where, instead of polluted alleys and streets, never free from dirt and disease, gardens may smile, and afford an useful and intellectual occupation for the operative after the labour of the day.

We may now venture to describe, as simply as we can, the *modus operandi*. Suppose a torrent of water, in an almost inaccessible mountain, several miles from a spot admirably calculated for establishing a manufactory. If the torrent be made to work, by means of a water-wheel, exhausting pumps, which draw out the air from an air-tight tube, made of iron, or any material which will remain air-tight, and bear at the utmost, fifteen pounds external on the square inch, it is clear that, if the other end of the tube is connected with the slides of an engine, one side of the piston in the engine would be exhausted of the air in it: if the air is allowed to enter on the other side, it is evident, if the vacuum be perfect, that there would be the pressure of fifteen pounds on the square inch of the area of the piston: as the vacuum never is complete, make the calculation at two thirds, or ten pounds effective pressure. The position of the slides changing in the usual way, the reciprocative action ensues as in a steam engine. It is working with air instead of steam, and which air is exhausted through a tube at any distance, and carried either above or under ground, as most convenient, so that it be only kept air-tight. The friction of attenuating air, though trifling, must be considered. It must be always kept in mind that no power is or can be gained: it is only transferred, and that with some loss. But, as the difference between the same power produced by coals and steam, and the expenses of locality and other incidents, are great, the little loss can be easily borne. It must be clear that the original amount of power may be kept whole, or divided either into a few or many branches, and each taken to its separate engine; so that the aggregate, allowing for friction, does not exceed the primary amount of power obtained from the torrent, river, wind, or fire. John Hague, the engineer, of Cable Street, Wellclose Square, has earned the immortal honour of bringing to perfection that pneumatic transfer of power, and thus enrolled his name as a benefactor to his country. (*Id.*, p. 685.)

Harper and Joyce's Stove. — The fuel used in this stove, and for the preparation of which a patent was taken out, turns out to be nothing more than charcoal, prepared in such a manner as to free it from its smell; and, as some say, to render it on that account still more dangerous than a common charcoal stove. As the analysis of the fuel has been given in the *Athenæum* for April 28., and in the *Mechanic's Magazine* for May 5., we consider it unnecessary

to republish them here. We shall only say that, according to the examination of Professor Everitt, the fuel used by Messrs. Harper and Joyce "appeared to be only well-burnt wood charcoal, with, perhaps, a little additional alkaline carbonate, not containing, as common charcoal often does, portions of wood half charred, which, when the charcoal is lighted, give off some smoke and certain vapours, irritating to the eyes and nose; but, as respects the quantity of carbonic acid and heat produced during the burning of a given weight of this and the same weight of well prepared charcoal, there is no appreciable difference." The analysis of Gay Lussac, which will also be found in the *Mechanic's Magazine*, is to the same effect; so that this stove, which has made so much noise during a short period, will probably very soon be only a matter of history. — *Cond.*

Dr. Arnott's Stove. — On this subject we refer to p. 230., and we shall again recur to it, probably in our July No. In the mean time we expect to see a new stove and new open fireplace, both by Julius Jeffreys, Esq. One peculiar feature in Mr. Jeffreys's stove is, that where there is no chimney the smoke will be carried off in an underground drain, probably on the double current ventilation principle. — *Cond.*

New Camera Lucida. — M. Kruines has presented to the Academy of Sciences a new camera lucida, by means of which the image of any distant object may be transferred to paper by tracing its outlines with a pencil. M. Kruines has substituted, for the quadrangular prism of Wollaston, two glasses, placed at such an angle to each other that the image of the object, after striking obliquely on the upper glass, is reflected to the lower glass, and from the latter to the eye, which at the same time sees clearly the paper and pencil through the lower glass. The image formed by this instrument is seen in an upright position, in consequence of being twice reflected; but it is not so distinct as in the old instrument, which forms an image that can be easily traced with a pencil. In other respects, the instrument of M. Kruines has the advantage, as it only costs half the price of the others. (*L'Echo du Monde Savant*, Aug. 30. 1837.)

Zinc not oxidisable. — M. d'Arlincourt has invented a kind of zinc which is not oxidised by the action of weak acids, or by atmospheric influences, although it is not yet known whether or not it will resist the effects of sea water; if it does, there would be a saving of two thirds by employing it instead of copper for sheathing ships. It is a compound of zinc, lead, and tin. (*L'Echo du Monde Savant*, Nov. 8. 1837.) Ornaments for affixing to cast-iron objects are frequently formed of this composition in London.

ART. II. Foreign Notices.

FRANCE.

ARCHITECTURAL Prize by the Institute of France. — At the last distribution of the prizes by the Institute of France, the subject for the *grand prix* in architecture was "a Pantheon," which the instructors directed the competitors to consider as an edifice consecrated to the memory of those distinguished men who add lustre to their country by their virtues, their services, or their talents; which might be regarded as a Temple of Glory, and treated with an architectural magnificence commensurate with the importance of the monument. The exterior, as well as the interior, were required to indicate the purpose of the building; and, besides, the hall of the Pantheon should contain porticoes, vast vestibules and halls of introduction, with a tribune in the interior, for the delivery of orations. The basement was to contain vaults for the burials, with ample staircases to go down to them. An enclosure, surrounded by porticoes, sufficiently large to contain the carriages and processions connected with the solemnities. Quarters were to be provided for four hundred soldiers, to whose care the building was to be confided. The first grand

pris was awarded to M. J. F. B. Guenepin, aged thirty years, pupil of M. Guenepin, member of the Institute of France, and of the Royal Institute of British Architects. The second was gained by M. A. J. Hénard, aged twenty-five years, pupil of MM. Huyot and Le Bas, also members of the Institute of France, and of the Royal Institute of British Architects; the third medal was adjudged to M. Jules Durn, aged 24 years, pupil of M. Callet. — *M. I. B. A. Feb.* 1838.

Canal parallel to the Banks of the Rhine, from Basle to Strasburg.— M. Fourneyron has communicated to the Academy the project for a railroad, with a parallel and navigable canal, from Basle to Strasburg, by Mulhouse, Colmar, &c. It has been found that, at low water, the waters of the Rhine, in their passage from Basle to Strasburg, have a force of from 400,000 to 500,000 horse power. The project in question consists in collecting a very small part of this power, by means of a lateral canal, upon which 100 mètres (325 ft.) of elevation will be divided into thirty falls, from Mulhouse to Strasburg. On this line a total force of 40,000 horse power will be obtained, which will produce an annual revenue of about 40,000,000 of francs. Alsace is now covered with steam engines, for which fuel is procured at about 80 or 100 leagues' distance. The expense of a steam engine is reckoned at 1200 or 1500 francs for each horse power, by the year; and it is believed that by the projected canal this same power might be produced for 200 francs per annum.

It is also proposed to form a railroad between Basle and Strasburg, upon which the waggons would be moved by hydraulic power (*moteurs*); for which purpose it is intended to employ another part of the strength of the waters of the river. The waggons and the diligences on this road would go at the rate of from six to eight leagues an hour. (*L'E'cho*, Dec. 13. 1837, p. 207.)

Cathedral of Chartres.— Last year, as it is well known, the imprudence of a journeyman plumber had nearly caused the destruction of the Cathedral of Chartres. The loss would have been irreparable; for the cathedral of Chartres is one of the richest monuments which remain to us of the middle ages. Its bells, painted windows, and the magnificent (*jubé*) gallery which surrounds its choir, add to the beauty of its somewhat austere form, and compose a whole which real connoisseurs alone can appreciate. Fortunately the progress of the fire left the most interesting parts almost uninjured. The recent experience which has been obtained, of the danger of introducing fire among old dried timbers, has prevented a repetition of the fault which was committed in 1822, in the case of the Cathedral of Rouen, when the wooden framework of the roof, having been set on fire by lightning, was reconstructed of wood. It has been now decided that that of the Cathedral of Chartres is to be made of metal; and the government, in adopting this plan, has only yielded to the advice of almost all the men of science. It has been thought necessary especially to order the construction of two bays of joists (*travées*), which were to be formed at the workshop of the artificer to whom this attempt was intrusted. These bays are to be composed of three trusses (*fermes*), in the form of ogee arches (*d'arcs ogives*) inscribed within a triangle, the form of which is determined by the gable ends (*pignons*) of masonry, which surmount the principal façade and each arm of the cross. The ogee arch (*l'arc ogive*), of about 40 ft. in extent (*ouverture*), is formed of a framework of metal, with open grooves (*châssis de fonte évidés à jour*) of an elegant but simple form, connected by large iron pins (*boulons*): the head rafters (*arbalétriers*) which form the exterior triangle, and which are intended to support the roof, are made of wrought iron. The trusses (*fermes*) are connected by cross quarters of timber (*entretoises*), which answer the double purpose of fixing them firmly (*assujettir*), and of supporting a grating intended to be covered with zinc or copper. Nothing can be imagined more elegant, and at the same time more imposing, than this construction; the effect of which will be increased when placed on the arches (*voûtes*) of the church: it will be in some degree a new cathedral, raised (*improvisée*) on the old one. The

project entrusted to M. Baron, architect of the cathedral, has obtained the unanimous approval of the visitors. (*L'E'cho*, Nov. 29. 1837, p. 187.)

Horloge de la Mort du Roi. — It is intended to reestablish at Versailles, in the court called Cour de Marbre, the clock of the king's death. This clock is, as is well known, without works, and it has but a single hand, which is placed at the precise hour at which the late king of France died, and which does not move during the whole of the reign of his successor. This royal custom dates from the time of Louis XIII. (*L'E'cho*, Nov. 29. 1837, p. 188.)

Safety Apparatus contrived by a Galley-Slave. — An individual named Tester, a mechanic, and Leterrier, a clockmaker, now confined in the Bagne at Brest, have lately invented a safety apparatus, calculated to prevent explosion in steam boilers. (*L'E'cho*, Dec. 13. 1837, p. 204.)

Museum of Besançon. — M. Magnencourt, the deputy, has presented to the museum of Besançon a copy in plaster of the friezes of the Parthenon, which he has brought from Italy. (*L'E'cho*, Dec. 13. 1837, p. 201.)

Ancient Church in Brittany. — A curious fragment of a very ancient church, which is mentioned in history under the name of Notre Dame de l'Hôtellerie, had long been preserved in the town of Dinan, in Brittany. This fragment, which consisted of an old gate, had often attracted the admiration of antiquaries; and it was the more valuable, as, though it dated from the romantic era, it had full arches (à plein cintre), and was ornamented like the richest architecture of the 16th century. It has just fallen a sacrifice to modern civilisation. (*L'E'cho*, Nov. 18. 1837, p. 175.)

Fonvielle's Filtering Apparatus. — M. Arago read to the Academy of Sciences a report made by a committee appointed to enquire into the subject of M. Henri de Fonvielle's newly invented filter. It is well known that rain water collected in cisterns cannot be preserved pure, unless it be made to pass through a stratum of some porous substance, in the interstices of which it may deposit the foreign matter collected in flowing over the roof, &c. Well water, on the other hand, always contains some earthy particles received in its passage through the soil; and river water, with respect to its purity, may be considered as intermediate between these two. Thus, the waters of the Seine, and those of the Garonne, are considerably purer than the waters of the springs and fountains in their neighbourhood; but this advantage is more than compensated for by the constant muddiness of the river water after rains or thaws. For example, the quantity of foreign matter held in suspension in the waters of the Seine, during floods, is sometimes as much as 1 in 2000; so that a person who drinks six pints of water in a day would also take $\frac{3}{4}$ oz. of earthy matter. To obviate this, it has in modern times been tried to purify water by filtration; and it was to effect the same end that the ancients constructed such expensive aqueducts. Standing at rest is not sufficient to purify the water which is required for the wants of a large town, for it would require at least eight or ten separate reservoirs, large enough to contain all the water wanted for one day's consumption; and this water, remaining stagnant for six or eight hours, could not fail to acquire a bad taste, from the decomposition of insects that had fallen into it, and from the vegetation there produced. Allowing water to stand at rest can only be considered as a means of disengaging the grosser impurities; and it is under this point of view only that reservoirs have been established in England and France. Science, or rather chance, has discovered a means of hastening, and even of rendering almost instantaneous, the precipitation of earthy matter held in suspension in water. This consists in throwing into it powdered alum. In the water of the Seine, by this process, the mud is seen to collect into long thick strips, and to be quickly deposited. This mode is, however, expensive; and, as it only separates the grosser particles, it does not supersede the ordinary modes of filtration. Sand and gravel have been tried, and found to answer to a certain extent, but they only deprive water of its earthy particles. Since it has been known that charcoal has the property of absorbing matters resulting from the putrefaction of organised bodies, filters of charcoal have been em-

ployed; and this, at the present day, is the limit of the theory of filtration, no further advance having been made as far as regards the question considered in an economical point of view. The only water company in London that purifies its water, that of Chelsea, does so by means of three large reservoirs of an acre in extent, and communicating with each other. In the first two the water is allowed to deposit its silt, and in the third it passes through a bed of sand and gravel 6 ft. thick, where it is finally purified. When the third basin is entirely empty, the sediment is removed, and replaced by a new layer of sand. The system introduced at Greenock in 1828, by Mr. Thom, has this advantage over that at Chelsea, that the clearing of the water is effected by itself, and that the whole mass of filtering sand is brought into use. This mass forms a bed about 5 ft. in thickness. The water may enter the basin filled by the sand and gravel either above or below. If the filtration is going on by the descent of the water, for example, when the filter is perceived to be obstructed, and flows slowly, the water is made to enter below, and in its ascent it carries away the sediment in the upper part by a discharge pipe. In France, filtration has not as yet been tried on a grand scale. It is done by means of a great number of small prismatic cases lined with lead, open above, and containing at the bottom a layer of charcoal between two layers of sand and gravel. The filtering matter, or at least the upper layers, in these boxes, should be renewed or cleaned every day, or even twice a day. Every superficial mètre (3½ ft.) of filter gives about 3000 litres (1300 gallons) of clear water in the 24 hours. ("Il faudrait donc 7 mètres superficiels ou 7 caisses cubiques d'un mètre de côté par pouce de fontaine, et 7000 caisses pareilles pour le service d'une ville où la consommation serait de 1000 pouces.") There is, however, a very simple means of augmenting the product of these boxes, which consists in having them hermetically closed, and causing the water to pass through the filtering mass, not by means of its own weight, or by a slight pressure, but by the action of great pressure. This is the principle of M. Fonvielle of the Hôtel Dieu's filter, which, although it has only 1 mètre (3 ft. 3 in.) of superficies, gives every day, by the pressure of 35 in. of mercury (an atmosphere and a sixth), at least 50,000 litres (more than 50,000 quarts imperial measure) of clear water, or, at a maximum, 137,000 litres.

M. Ducommun has claimed the priority in the employment of pressure in filtration; but it appears certain that M. Fonvielle was the first to prevent the return of the filtered matter by the action of the pressure; and, lastly, his apparatus, like that of Mr. Thom at Greenock, has the advantage of admitting the water either above or below, and consequently of cleansing itself when choked up by the sediment. (*L'Echo du Monde Savant*, Aug. 23. 1837.)

GERMANY.

A Temple dedicated to the eminent Men of Germany.—The king of Bavaria is going to erect an edifice dedicated to all the worthies (gloires) of Germany, on a mountain situated on the banks of the Danube, near Ratisbon. The mountain is to be divided into terraces, and on the platform, at the summit a Grecian temple will be erected. A flight of steps 60 ft. broad will lead to the first terrace; stairs divided into two flights will lead to a second terrace, and thence to three others. In all, there will be 300 steps, from the base of the mountain to the temple.

The edifice will be of grey marble: the exterior, decorated with pillars and pediments, will have some resemblance to the Madeleine at Paris. The pillars will be 54 in number, and of the same colour as the rest of the building. Under the vestibule, will be an entrance 24 ft. high, which will have a bronze door, leading to a gallery 150 ft. long by 50 ft. broad, and nearly of the same height. Projecting pilasters (des pilastres mis en saillie) will divide this apartment into three sections; and are intended to break the uniformity. The ceiling of each section will be in the form of a tent, and will be covered with

bronze, and perforated for a skylight. Above the cornice, on both sides, a row of red marble panels will contain the names of those celebrated men whose portraits have not been obtained, in letters of gold. Fourteen giants, representing German warriors, will support the ceiling above the pillars and pilasters.

In the gallery, the busts will be arranged along the walls, on stylobates of grey marble. This gallery will be separated by pillars from a back chamber (*arrière salle*), executed in imitation of the opisthodomos of the Greek temples. A frieze 300 ft. in length will extend along the gallery, on which the most remarkable events of ancient Germany will be sculptured in Carrara marble. The two pediments will present two large historic pages: the one will represent the victory of Arminius over the Romans, and the other the *regeneration* of Germany, after the fall of Napoleon. The figures of these pediments will not be in bas relief: they will be in alto relievo (*rondes basses*), like the Pantheon at Athens. By this means, they will be rendered visible at a much greater distance. (*L'E'cho*, Dec. 13. 1837, p. 201.)

Railroads in Austria. — By the *Augsburg Gazette*, we are informed that the Austrian government has at length resolved on executing a double project of vast utility to its Italian possessions, that of establishing two railroads; one from Vienna to Trieste, and the other from Venice to Milan. A regular weekly steam-boat communication is already established between Trieste and Venice, and this station will receive an adequate augmentation of its efficiency when the railroads are finished. The railroad from Venice to Milan is to be subdivided into three branch lines: the first, 62 leagues in length, will intersect the whole Lombardo-Venetian kingdom; the second, about the same length, will traverse Mantua, Lodi, the Milanese territory, and the whole of Lower Italy; and the third, 64 leagues in extent, will traverse the rich vicinity of the Lake of Garda, and pass the great towns of Brescia, Padua, Vicenza, and Verona.

Opening of a Railroad at Vienna. Letters from Vienna of November 23. state:—This morning the opening of our northern railroad took place. The number of spectators was immense, and it was easily perceived by this concourse how much interest the inhabitants of Vienna take in the progress of the arts (*l'industrie*). The emperor and empress were present at this solemnity. The hours of starting were 10 in the morning, noon, and 3 in the afternoon. The distance from the Danube to Wagram, which is 3 leagues, was performed in 23 minutes. The trains (*convois*) consisted each time of eight carriages, containing at least 130 persons. (*L'E'cho*, &c., Dec. 13. 1837, p. 201.)

ITALY.

The Excavations at Pompeii have been carried on for some time past with great activity; near the Street of Tombs, four pillars in mosaic, in good preservation, of the height of 15 ft., have been found in the passage (*allée*) of a house. This is the first discovery of the kind. (*L'E'cho*, Dec. 23. 1837, p. 207.)

GREECE.

Ancient Tomb. — A tomb has been opened at Athens, in which was found the body of a woman, having two candelabra of silver at her sides, as high as the thigh, but fallen to pieces. There were also a rich garland of flowers in solid gold, reaching from the left shoulder towards the right side, and in excellent preservation; seven gold rings with cut stones, ivory tablets, and other small ornaments. (*L'E'cho*, Dec. 23. 1837, p. 207.)

ART. III. Domestic Notices.

ENGLAND.

LANCASHIRE. — *Manchester Architectural Society.* The fifth *conversazione* of this Society took place in the rooms, Mosley Street, on Wednesday

evening. There was a numerous attendance of the members and their friends, and the *soirée* was of a very delightful and instructive nature. Amongst the works of art exhibited, we noticed drawings by Prout, Stanfield, Cattermole, Aspland, Crouch, R. Lane; two clever drawings by J. W. Hance, one a view of Windsor, the other a design for a new Exchange; several very spirited female heads by C. A. Du Val, &c. There were two cabinet pictures by Bradley, one by Liversedge, a fine landscape by J. W. Frazer, Esq., and a very clever painting ("A boy selling fish") by C. A. Du Val. George Peel, Esq., contributed three exquisite bronzes; and Messrs. Agnew, Grundy, and Zanetti also furnished numerous works of art.

The Society being desirous of exhibiting the designs lately sent in competition for the Catholic Church in Manchester (under the impression that public examination is the most effectual mode of insuring just decisions in competitions), such architects as were candidates are respectfully requested to forward their designs as early as possible to the Society's rooms. — *John Wm. Hance, Hon. Secretary. 45, Mosley Street, April 6. 1838. (Newspaper.)*

Patent Roof. — We have had an opportunity of seeing a roof erected over a new building in Tasle Street, which is upon Witty and Co.'s patent principle, that was announced in the Staffordshire papers some time past. It is astonishing to see the simple plan and its power in supporting the lead roof. The principle is founded upon correct mechanical science. We understand the British Gas Company, at Hanley, have a beam upon the same plan over their retort house, of 50 ft. span, supporting an iron roof of 25 tons. This beam is made of sheet iron, and is as simple as the above-named roof in its appearance. The uses of complicated timber work in floors, roofs, and beams, upon the common system of carpentry, will, no doubt, be ultimately superseded by this principle, as it combines, in so rare a manner, simplicity and lightness with strength and economy. We believe this roof has been executed under the superintendence of Mr. Arthur Woolley, architect, of Princess Street. (*Manchester Times*, May 5.)

Laying the first Stones of the New Bridge, Manchester. — On Saturday week, the first three stones were laid of the bridge about to be erected in lieu of the Old Bridge, connecting Manchester and Salford, on a fine smooth bed of red sand-rock, about 12 ft. below the surface of the water. Mr. Armitage, the boroughreeve of Salford, and a few other gentlemen, including Mr. Carrington, the bridge-master, were present. The three first stones contain 124 cubic feet, weighing 9 tons 10 cwt., and the remainder vary from 1½ tons to 5 tons each, from the quarries of Bank Lane, near Bury, and the summit near Blackstone Edge. (*Blackburn Standard*, April 11. 1838.)

SCOTLAND.

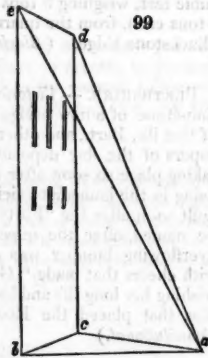
PERTHSHIRE. — Victoria Bridge. On Thursday, the 29th ult., the foundation-stone of a new bridge over the river Gauir was laid by Sir Niel Menzies of that ilk, Bart., and others, in due masonic form, and various coins and newspapers of the day deposited in a bottle, hermetically sealed. The ceremony taking place so soon after the accession of our youthful queen, and the scene being in the immediate vicinity of the village of Georgetown, and the barracks built soon after the "Forty-five," it naturally occurred that the building should be named after the queen. After drinking success to Victoria Bridge, an overflowing bumper was dedicated to Her Majesty Victoria I., accompanied with cheers that made "Garb-mheal" and the surrounding mountains echo; wishing her long life and happiness, and "that she may never forget the principles that placed the House of Brunswick on the British throne." (*Perth Constitutional*.)

ART. IV. Retrospective Criticism.

ERRATUM. — In p. 205. line 4. of note, for "*Monastères*" read "*Monuments*."

Parsey's Natural Convergence of Perpendiculars. (Vol. V. p. 92).—I am much gratified by the gentle and courteous disposition which Mr. Parsey manifests in his reply to the remarks of Mr. Pocock and myself. Had we all such antagonists to contend with, we should be in no danger of forgetting the object of enquiry, in the desire of showing our own powers of sarcasm, as is too frequently the case in such discussions. I am well aware, also, of the disagreeable character of a dispute, in which one party is opposed by another with arguments which, long ago, and at an early period of his investigation, occurred to, and were answered in, his own mind. But Mr. Parsey must excuse me for bringing forward such arguments, inasmuch as the public will never be satisfied until they have all been answered: he must farther excuse me for doubting, as all disputants do, that they can all be answered. Mr. Pocock and I should certainly consider Mr. Parsey's fear of injury from our remarks as very complimentary, but it is altogether ungrounded. No mind whose opinion is worth anything is biased by the mere assertion of individuals; but its spirit of enquiry is stimulated, and it immediately commences an investigation of the subject which Mr. Parsey, confident as he is of the truth of his practice (of his principles none can doubt the truth), ought not to dread, which, if he did dread, he could not, as the institutor of a new practice in drawing, avoid. However, as he invites us to "fair and courteous discussion," let me hope that he will find neither Mr. Pocock nor me more desirous of proving ourselves right than of arriving at the truth.

We all agree in principle: the disputed point is, whether vertical convergence should be represented in a drawing. Now, Mr. Parsey says that I err in affirming convergence is trifling when the object only subtends an angle of elevation of 60° : I do so, on calculating the convergence trigonometrically. I find Mr. Parsey's conclusion quite right, but I do not understand his diagram, owing to the misprinting of the letters; and he has not given us the mode by which he arrived at his conclusion. Perhaps the annexed demonstration is clearer. Let $b c d e$ (fig. 99.) be the front of any building, 100 ft. wide, and 176 ft. above the level of the eye. Let the eye of the spectator be at a . Let $a b$ $a c$ be each 100 ft.; consequently, angle $c a b = 60^\circ$, and angles $b a e$, $c a d$ also equal 60° . Therefore $e a = 200$ ft., and $d a = 200$ ft. And as $e d = 100$ ft. angle $e a d =$ about 29° , that is, less than half of angle $c a b$. And therefore the apparent length of $e d$ is rather less than half that of $c b$. It is evident, then, that I was wrong in affirming that this convergence was not to be represented, because it was *nearly imperceptible*. There is another reason for its non-representation, which Mr. Pocock has slightly noticed, but which Mr. Parsey evidently had not noticed. It appears strange that this immense convergence should not show itself by cutting angles with parallel perpendicular lines which are close to us. Does it do so? Let Mr. Parsey look out of his window, and I will look out of mine. It is within 3 ft. of me, and beyond it, at a distance of about fifty yards, rises one of the most noble buildings in Oxford, to a height of about 72 ft. Its perpendicular lines, therefore, though not quite so convergent as those of the diagram, must be considerably so. Yet the perpendicular lines of the window frame fall *precisely* on those of the distant building. I try them again and again: there is not an angle between them which a mite could measure; and the reason is evident. The argument which applies to the diagram, when $a b$ is 100 ft., and $a c$ 200 ft., applies with exactly the same force when $a b$ is 6 ft. and $a c$ 12 ft. There is precisely the same difference in the angle, the same in the length of the line; and the convergence of verticals, therefore, is *always the same when they subtend the same angle*, whether they be near or distant, 4 ft. or



4000 ft. high. The eye, therefore, puts the perpendicular lines of the picture into perspective (when the spectator stands at the point at which alone even the retiring lines can be in true perspective) exactly as much as it does those of nature; and, therefore, were the artist to represent any such convergence, he would be put altogether out by the increased convergence given by the eye.

The same is the case with regard to parallel horizontals, which are put into perspective in the picture in the same way; and, indeed, in general, whenever the lines in the painting are in the same place which they are in naturally, no convergence is to be represented.

These considerations will free Claude, and Canaletti, and the professor of perspective to the Royal Academy, from the charges of desperate error, which Mr. Parsey casts upon them; and we may still look at the works of our favourite masters without being annoyed by their ignorance of perspective.

With regard to what Mr. Parsey says of his spectrometer, he must put it aside in applying it to the eye. All perpendiculars, near or distant, correspond *exactly* with each other, and are parallel, apparently as well as actually parallel; that is, as far as regularly convergent lines can be parallel. They all meet in the same vanishing points, which are, as I have shown by means of reflections in water, one exactly above the spectator's head, and one below his feet.

I have only to add that, in allowing the angle of 60° to be measured wholly *above* the line of the eye, I have taken a license which Claude sometimes avails himself of, but, I think, Canaletti never. The eye is always to be supposed looking straight forward, and, therefore, can only embrace an angle of 30° above the line of sight, and an equal angle below. I have always found that, in sketching alps, or other precipices, I never made a satisfactory drawing, if the upward angle were more than 30° . However, in architecture, an upward angle of 60° is sometimes allowable. I neglected to say that, if Mr. Parsey will fix his eye at a given point, looking at a landscape through a pane of glass, and will trace on it with a diamond edge lines corresponding to those of the landscape, he will find all his retiring lines convergent, all his verticals vertical and parallel. This is a true test of perspective. — *Kata Phusin. Oxford, May 1. 1838.*

Preservation of Architectural Remains. (Vol. V. p.230.)—Mr. F. Lush appears to think that devotion is so easily effaced from a congregation, that a mere step from the choir to the nave will put to flight all the proper feelings which so much pains has been taken to create; but, in truth, I have a better opinion of the really devout, and do not at all apprehend that the making a repository of the nave of a cathedral for the fragments of our ancient architecture, any more than the unsightly modern monumental tables which generally crowd these situations, will interfere with devotional pursuits. The idle, curious, or the inattentive, would, no doubt, find a ready excuse for their errors in these objects, but the truly religious will rather look upon them as monuments of the piety of our forefathers; and that, by placing them in this situation, we are rendering a tribute of the highest respect to their memory. How frequently might the precepts heard in the choir be brought fresh into our minds, with redoubled force, upon viewing the known works of some great ecclesiastical benefactor in the nave! How might we follow up the train of ideas, thus created, by a research into the private history of an enlightened mind! and how might we then leave the sacred pile, full of the benevolence which departed worth has brought to our recollection! And, as I have before stated, if one only is benefited, a great object is attained. The few who would so soon shake off the influence of the solemn worship would as easily do so now, when loitering along the nave, scanning with listless eye the engraven names fixed upon its walls; perhaps names, too, only remembered by a few, and whose deeds are only inscribed on the marble tablet. Surely, the evil cannot be so great as Mr. Lush states, compared with the good which would be derived from the many opportunities of placing before the public numerous classifications of the architecture of the middle ages. A national museum could not

effect this object to so great an extent as it deserves. Not only the naves of our cathedrals, but the cloisters, where they are in existence, and some of the chapterhouses, might very properly be appropriated for this purpose. Can the ancient works of art, which are of so much importance to us, be more objectionable than the modern, which now crowd the naves of all our cathedrals? There would be no occasion to block up windows, to cut down ornaments, or remove columns and arches, for the ancient works; a practice too frequently resorted to for modern ones. The simplicity of the nave, and the uniformity of the aisles, without these relics of bygone days, is enough to create pleasurable sensations in the reflective mind; but, with such additions, which call up the zeal and energy of a few individuals who struggled with the darker spirits of superstition, can such minds be less humanised? Rather would they tend to soften the wilder passions, and create such benevolent associations as would tend to the further developement of an enlightened understanding. I would not limit the preservation of these invaluable treasures of our art by placing them in a single confined spot, where very few would have an opportunity of seeing them; but I would distribute them over the whole kingdom, in the manner I have named, so that they may be ever before the public, that a simultaneous increase of knowledge might be the effect; for, if we wish knowledge to be generally diffused, the means of doing so should not be confined to one spot. There would be little danger of cumbering the buildings, as by this general distribution, a few specimens would be enough to form a complete classification; and they would certainly add to the pictorial effect, and, in many instances, take off the bare and cheerless appearance of this part of the building. Another advantage to be gained by this arrangement is, that the peculiar style of architecture of the different parts of the country might be seen in each cathedral. — *E. B. L. London, May 5. 1838.*

ART. V. Queries and Answers.

GALVANISATION of Iron-Work, to preserve it from Rust. — M. Sorel of Paris has discovered that iron pipes, chimney pots, railings, &c., when galvanised, are less liable to rust; and there is, accordingly, an establishment commenced at Paris for carrying on the process, of which we expect shortly to give some further details. In the mean time, we shall be happy to hear from any of our readers who has a practical knowledge of the subject. — *Cond.*

Margary's Process for preventing the Dry Rot is said to be about one tenth of the cost of Kyan's corrosive sublimate, and to be equally applicable to canvass and cordage. "We have seen the experiments, and watched the progress of them. The Admiralty, with becoming zeal, on being informed of the facts, directed the fairest trials to be made at Woolwich, and have since had a quantity of canvass prepared under their own inspection." (*Brit. and For. Rev.*, April, 1838, p. 695.) [We should be glad of some particulars respecting this process from some person who has tried it. — *Cond.*]

ART. VI. Institute of British Architects.

FEB. 12. 1838. — P. F. Robinson, V. P., in the chair.

The balance in the treasurer's hands appeared to be 389l. 2s. 9d.

Elected. The Earl of Liverpool as an Honorary Fellow; F. H. Groves, S. S. T. Carlow, and W. A. Buckley, as Associates.

Presented. Casts of two Capitals of Marble Columns, from the Alhambra. An Engraving of the West front of Cologne Cathedral, from Dr. Moller of Darmstadt. Bryan's Biographical and Critical Dictionary of Painters and

Engravers, 2 vols. 4to. Impression of the Print of the Portrait of the late Sir Thomas Farquhar. Angell's Historical Sketch of the Royal Exchange, pamph. 8vo. Churches of London, No 14.

Paper read. The History of Llanthony Abbey, in illustration of the Drawings submitted for the Soane Medallion.

Soane Medallions. Four sets of Designs were sent in for the Restoration of Monasteries; namely, two for the Abbey of St. Mary, at York; one for Llanthony Abbey, Monmouthshire; and the fourth for Kirkstall Abbey, Yorkshire. The medallion was awarded to Samuel Sharp, Associate of York, for the Design for the Restoration of St. Mary's Abbey, at York, with the Motto, "*Ut Rosa flos florum, sic est Domus ista Domorum.*" The design for the Restoration of Llanthony Abbey, by Mr. G. E. Laing, possessed so much merit, that a medal is to be struck for it, from the Institute Die, having the wreath on the obverse, and the reverse plain.

The Essay which gained the Soane medallion was that by W. W. Po-cock, Associate, on Athenian Architecture.

Feb. 26. 1838. — J. B. Papworth, V. P., in the chair.

Elected. E. Lapidge, as Fellow.

Presented. Duke of Serradifalco's Work on Athenian Antiquities, vol 3. Portrait of the late John Rennie, Esq. A design for the Exchange at Ham-burg. Giffard's Short Visit to the Ionian Islands, Athens, and the Morea, 1 vol. 8vo. Specimens of Stone from the Neighbourhood of Whitby. Simms on Asphaltic Mastic, pamph. 8vo. Outline Drawings of the Abbey of St. Mary, at York. Wild's Architectural Grandeur, 1 vol. folio. Specimens of Felt, from Messrs. Borradaile.

Read. A paper on the Qualities of Timbers, and their Application to Con-struction. A Description of the Sewer built under the Harrow Road, by the Great Western Railway Company, by T. L. Donaldson. A Communication from the Baron Wellerstedt, describing an anticomcombustible Mixture for the Saturation of Timber, so as to render roofs, floors, &c., less liable to ignition.

Report of the Council presented at the Annual General Meeting held 7th of May, 1838. — When the Council in May last made their Report, it might have been thought that topics of congratulation were exhausted in the enu-meration of the successful results attending the formation and subsequent pro-ceedings of this Institute, which had then acquired stability and importance from the Charter of Incorporation granted by his late Majesty William IV. The Queen, however, with that love for art and science which has distinguished the very first year of Her Majesty's reign, has been pleased to become the patroness of this Institute; at once placing us on a footing with the most dis-tinguished societies of a similar nature in the empire. This honourable dis-tinction renders it a duty still more incumbent upon the members to promote the objects of the Institute by their personal cooperation, and the contribution of communications. It is by such means only that the body can continue to merit the august patronage which has been so graciously conferred. We must emulate the zeal with which other scientific societies are pursuing their re-searches, and, like them, contribute to the advancement of knowledge, and a more general diffusion of the true principles of taste and science.

The removal of the Institute to apartments at once more convenient, and in a more desirable situation, has been productive of a larger attendance of members and visitors at the ordinary meetings. This circumstance, together with the additions constantly making to the books, models, and casts, prove that the rooms previously occupied would have been totally inadequate to the accommodation now absolutely necessary. The constant accession of new members, and the conviction that the progressive increase of the library and collection would outgrow even the present apartments, induced the Council to repeat their application to government for accommodation in some public building. The Council considered that the present state of the Institute rendered the renewal of the application made in 1835 not inopportune. This

application was, as you are aware, again unsuccessful. The Council, however, cannot but consider that the question of such assistance being rendered to public scientific bodies acquires strength in the public mind, and that the government will at length feel itself justified in acceding to the reasonable expectations of those societies, and thus promote, by their countenance and support, the advancement of objects which are not merely of interest to individuals, but highly important to the nation.

The Council have thought it necessary this session to provide series of lectures, as complete as possible, upon various subjects connected with construction, not only for the purpose of general information, but to show that the Institute is aware of the advantages which must result to architecture from every department of science being made to bear upon the main object and purpose for which it is founded. The number of such courses is limited only by the pecuniary means of the Society; but the Council trust that the funds may allow the continuance of the same system of instruction, and that each session may be distinguished by the delivery of fresh series as satisfactory as those to which the members have listened with so much pleasure and improvement. There is a wide field still open, and, independently of the history and theory of architecture, as an art of design, there are acoustics, optics, mechanics, and other subjects, forming parts of the necessary practical education of the architect, which still remain to be considered. It is no less a matter of congratulation that professors of distinguished merit should be induced to consider their respective sciences, not merely in an abstract point of view, but in reference to their useful application to our art, which involves the comfort, the health, and consequently the happiness, of every class.

The result of the competitions for the medals offered by the Institute has this year been most satisfactory, and has led to the institution of an additional medal of merit, in order that the author of one of the unsuccessful designs, which evinced considerable talent, might receive a mark of the approbation of the members. This medal may be awarded in future also to those drawings and essays which, although distinguished by much merit, have not the first medals adjudged to them. The successful manner in which the subject of the restoration of a conventual building has been treated has confirmed the Council in their opinion of the propriety of calling the attention of the architects scattered over the united kingdom to our national antiquities, confident that the timely investigation of these remains, so deeply interesting to us as Englishmen, will rescue them from that oblivion which might attend the neglect of a few more years. Thus we shall have, ere long, an important accumulation of authentic documents and information upon the monuments, the taste, the skill, and the customs of our ancestors, valuable not only to the architect, but to the antiquarian, the artist, the historian, and the philosopher. We thus at once enrich our collection, and pay a debt of gratitude to those from the contemplation of whose works we derive so much instruction and delight. At the same time, it is highly important that we should not allow our national predilections to lead us to neglect the classic works of the ancients. It is therefore to be hoped that one of the subjects proposed for the prizes in each year will continue to be devoted to Greek or Roman architecture. The investigation of the principles which guided the masters of antiquity is essential to the student, and opens sources of the sublime and beautiful, indispensable to him who would distinguish himself in the art. His perception and powers must be necessarily restricted who can reject, as unworthy his notice, the resources and suggestions which each style offers. The architecture of every period and of every nation has its limits and its peculiar beauties; for, although it would appear that there is a point of perfection beyond which the skill of man cannot go, so there is no period in the history of any people in which the taste is so degraded, no country so lost in barbarism, where (if the mental faculties be vigorously exercised) the productions are undeserving attention, and entirely devoid of some characteristic quality.

Happily, the Institute has not to deplore the loss of any of its members since the last annual meeting; but we have had an accession of seven Fellows and fourteen Associates; eight Honorary Fellows have been elected during the last twelve months, in which list we can enumerate names of the highest nobility, and of personages distinguished by their influence, their personal attainments, and their love for art. Ten foreign architects have also been added as Honorary and Corresponding Members; the greater number at the suggestion of our valued brother in art, Dr. Moller of Darmstadt, whose interest in the success of our Institute is as active as it is valuable. The members have been gratified in welcoming as a visiter among them Monsieur Hittorff; and our zealous colleague, Monsieur Châteauneuf of Hamburg, takes part in the proceedings of this day. Several foreign students have also visited this country, in order to acquire information as to our practical construction and the distribution of our buildings, in reference to our usages and customs. They have been furnished, by direction of the Council, with letters of introduction to the principal members of the profession, both in London and other parts of the United Kingdom, and have acknowledged the attentions which they have in consequence received. Several of our own members have also visited the Continent during the past year, and have experienced the most cordial welcome from our foreign brethren. Thus has a reciprocal sentiment of good feeling been kept up among the architects throughout Europe, and the Institute of British Architects is regarded as the central body of the profession, consolidating a system of active cooperation and interchange of kindly offices.

The Council has redeemed the pledge given in its last Report; a catalogue of the library and collection having been printed and distributed among the members. Since its appearance, however, the Institute has received numerous additions. During the year, 44 volumes have been received, 36 prints, 7 models and casts, and 76 specimens of stones, besides various other objects. One other important acquisition has been a volume containing about 100 original sketches and finished drawings by Bibiena, Panini, Oppenort, and others; a most valuable collection, which, as a work of reference, whether to the more experienced professor or the junior member, is rich in original ideas and specimens of the mastery of those artists in drawing, perspective, and chiaroscuro. This rare collection we owe to the liberality of Sir John Drummond Stewart, of Grandtully, Perthshire, who, with a lively interest in the objects of the Institute, which cannot be too highly appreciated, has promised to make further additions to the class of original drawings. It is also to be noticed, that a considerable portion of the books have been received as presents from the Pontifical Academy S. Luke at Rome, and the Imperial Academy of Vienna; and that the Academy of Milan only waits an opportunity for transmitting its contribution to the library of the Institute. Our Honorary and Corresponding Members, Messrs. Hittorff, Guenepin, Vaudoyer, De Klenze, Hetsch, Châteauneuf, Moller, have also enriched our collection; and the Chevalier Gasse of Naples has announced a present of a copy of the *Voyage Pittoresque de Naples*, in the compilation of which he took a considerable part.

The Council would inadequately represent the feelings of the members, were they not to record the continued interest in the prosperity of the Institute evinced by their noble President. His Lordship, since the last annual meeting, has twice thrown open his mansion to receive the members and friends of the Institute, as also the leading men in art, science, and literature of the day. By this kindness and liberality the profession has been brought, as a body, under His Lordship's hospitable roof, into immediate intercourse with the noble, the learned, and the distinguished of this period, and has felt how much it owed to him for that consideration, which the art must acquire from the influence of his generous and munificent example.

The Council submit to the consideration of the members the balance sheet

of the receipts and disbursements of the past year. Among the donations, it is impossible to omit particular reference to the liberal contribution of our Honorary Fellow G. B. Greenough, Esq., whose name is intimately connected with the rapid advance which has been made within so short a period in geology, a science immediately allied to the pursuits and studies of the architect. It will be perceived that the permanent income has progressively improved. On the other hand, an additional expense, also of a permanent nature, has been incurred by the increased annual rental of the present apartments; and a considerable sum has been expended in the fittings, and other unavoidable incidental disbursements, which are not likely to recur. This extraordinary expenditure has necessarily arisen out of the removal to these apartments, a measure authorised by the special general meeting of the 10th of July, 1837, and consequently occasioning the appropriation of part of the funds, otherwise to be invested for permanent uses, which appropriation has also been sanctioned by the general meeting of February last. The Council, however, are fully impressed with the necessity of keeping the current expenditure within the income: but the first establishment of all societies of this kind unavoidably requires much expense in the outfit, &c., in which it would be equally impolitic to be parsimonious or profuse. It has been the desire of the Council to avoid either of these extremes.

Hitherto the Institute has flourished beyond the most sanguine hopes of its founders; but we must not rest satisfied merely with what has been already accomplished. An important sphere of duty attaches to the position which we have been called upon to assume, by the wishes of the profession, by the necessities of the art, and the improving state of these departments of science, the application of which is so important to construction. Its members, therefore, are bound to work out the objects of its foundation, to investigate every branch of art and science, connected with architecture, and thus to keep alive the interest now felt in our proceedings. To preserve the continuance of that support which we have already received from the learned, the wealthy, and the noble, we must make this an active and efficient society, and not rely upon a mere name. Each member must reflect that the Institute is in a degree dependent upon his personal assistance. It is by a combination of individual efforts alone that any value can attach to its proceedings, and that architecture, in its widest sense, can profit by our association. Let every member, therefore, at the end of each session, put this question to himself: "What have I contributed to the Institute during the past year?" and let him consider whether his answer be commensurate with the position which he holds in society and in the profession, and whether he has fulfilled the pledge given by him in the declaration which he signed upon his admission, "that by every lawful means in his power he will advance the objects of the Institute."

ART. VIII. Obituary.

M. FAUVEL, we learn, by a letter from M. Rizo Rangabé at Athens to the Royal Institute of British Architects, lately died at Smyrna. All Grecian travellers will remember with respect this patriarch of antiquarians, whose Greek antiquities formed the richest furniture of the French consulate at Athens, and whose stores of information upon the monuments around were open to every student who visited his hospitable though humble dwelling. — *M.I.B.A. May 23. 1838.*